TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1920.

No. 236.

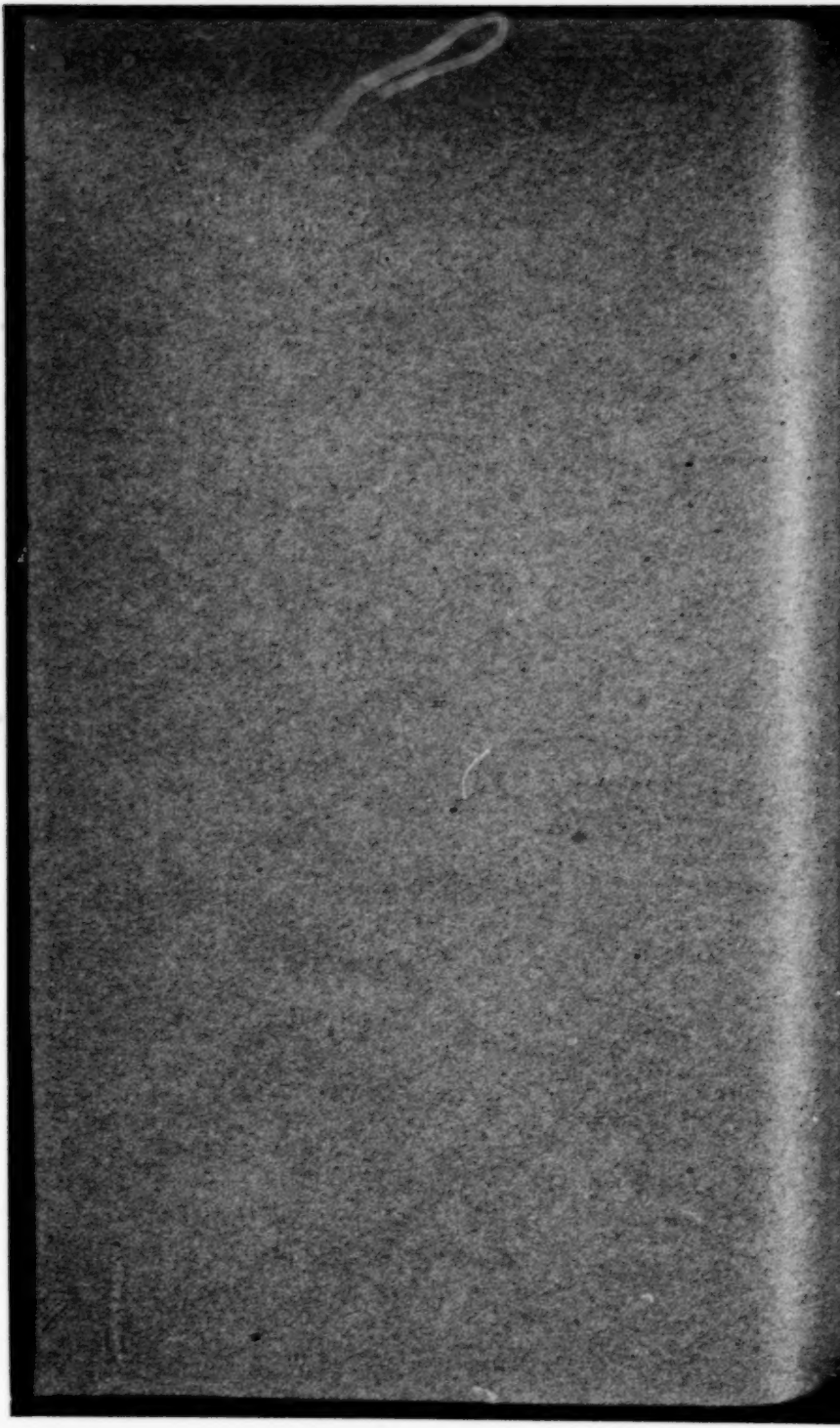
THE UNITED STATES OF AMERICA, PETITIONER,

vs.

AETNA EXPLOSIVES COMPANY.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CUSTOMS APPEALS.

Petition for Certiorari filed April 1, 1920.
Certiorari and Return filed May 12, 1920.



SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1920.

No. 296.

THE UNITED STATES OF AMERICA, PETITIONER,

vs.

AETNA EXPLOSIVES COMPANY.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CUSTOMS APPEALS.

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United States Court of Customs Appeals.

No. 1974.

AETNA EXPLOSIVES COMPANY, APPELLANT,

against

UNITED STATES, APPELLEE.

PETITION FOR REVIEW.

To the Honorable the United States Court of Customs Appeals:

Your petitioner, being dissatisfied with the decision of the Board of United States General Appraisers dated February 26th, 1919, in protests Nos. 850017/29, 850018/30, 850184/31, 850236/33, 850237/32, 850375/34, 850821/35, and 850822/36, as to the assessment of duty on certain imported merchandise covered by entries Nos. 737, 774, 798, 822, 904, 885, 940, 959, 972, 1015, and 1019, by rail, entered at the Port of Ogdensburg, New York, on the 5th, 12th, 13th, 14th, 15th, and 18th days of November, 1917, on the 5th, 8th, 21st, 27th, and 31st days of December, 1917, and on the 17th and 19th days of January, 1918, respectfully prays that the questions involved therein may be reviewed by your honorable court, and that such relief in the premises may be granted to it as to your honorable court shall seem just and proper.

The particulars of the errors of law and fact in the said decision of which your petitioner complains are set forth in the annexed assignment of errors.

Dated, New York, March 26, 1919.

AETNA EXPLOSIVES COMPANY,
Petitioner,
By PRATT, KOEHLER & BOYLE,
Its Attorneys,
61 Broadway, New York, N. Y.

ASSIGNMENT OF ERRORS.

UNITED STATES COURT OF CUSTOMS APPEALS.

AETNA EXPLOSIVES COMPANY, *Appellant*,

against

UNITED STATES, *Appellee*.

The Board of United States General Appraisers erred:

1. In holding that the merchandise in question was dutiable at fifteen per cent ad valorem, under paragraph 5 of the tariff act of 1913, as a chemical mixture.

2. In holding that the merchandise was not free of duty, under paragraph 387 of the tariff act of 1913, as nitric acid.

3. In holding that the addition of sulphuric acid to nitric acid, made solely for the purpose of protecting the tank car in which the nitric acid was to be shipped, and solely in compliance with the regulations for the transportation of explosives and other dangerous articles by freight adopted by the Interstate Commerce Commission, and in proportions having no known trade use, subjects the nitric acid desired to be transported to duty at fifteen per cent ad valorem, under paragraph 5 of the tariff act of 1913, as a chemical mixture.

4. In overruling the protests of the appellant.

5. In not sustaining the protests of the appellant.

Endorsed: Copy received Apr. 7, 1919. Bert Hanson, Assistant Attorney General.

Endorsed: No. 1974. United States Court of Customs Appeals. Filed Apr. 11, 1919. Arthur B. Shelton, clerk.

STIPULATIONS AS TO PRINTING.

UNITED STATES COURT OF CUSTOMS APPEALS.

No. 1974.

AETNA EXPLOSIVES COMPANY, *Appellant*,

against

UNITED STATES, *Appellee*.

It is hereby stipulated and agreed, by and between the attorneys for the respective parties hereto, that Exhibit 1, in the case of C. J. Tower, Protest No. 799171, and Exhibit 1 in the case of Nonnabo Chemical Company, Protest No. 803766, need not be printed, and that only the following portions of Exhibit 2 in the pending case

need be printed, viz, title page, heading and two paragraphs under "General Notice," on page 4, and pages 18 to 39, both inclusive, except the forms of labels and the drawing on page 38, but that all the other exhibits and all the custom house invoice and entry papers shall be printed.

Dated, New York, April 23, 1919.

PRATT, KOEHLER & BOYLE,
Attorneys for Appellant.
BERT HANSON,
C. D. F.,
Attorney for Appellee.

Approved.
R. M. MONTGOMERY,
Presiding Judge.

Washington, April 30/19.

Endorsed: No. 1974. United States Court of Customs Appeals. Filed Apr. 30, 1919. Arthur B. Shelton, clerk.

UNITED STATES COURT OF CUSTOMS APPEALS.

No. 1974.

THE AETNA EXPLOSIVES CO., *Appellant*,

v.

THE UNITED STATES, *Appellee*.

It is hereby stipulated and agreed by and between the attorneys for the respective parties hereto that the custom house entry papers returned with the record in this case need not be printed.

It is further stipulated and agreed that the stipulation filed herein dated New York, April 23, 1919, may be revoked in so far as it relates to the printing of the entry papers above referred to.

Dated, New York, May 10, 1919.

PRATT KOEHLER & BOYLE,
Attorneys for Appellant.
BERT HANSON,
Attorney for Appellee.

Approved.
O. M. BARBER,
Judge.

Washington, May 14/19.

Endorsed: No. 1974. United States Court of Customs Appeals. Filed May 14, 1919. Arthur B. Shelton, clerk.

RETURN OF THE BOARD.

BOARD OF UNITED STATES GENERAL APPRAISERS.

No. 1974.

ÆTNA EXPLOSIVES COMPANY, *Appellant*,

v.

THE UNITED STATES, *Appellee*.

The petitioner above named, having applied to the United States Court of Customs Appeals for a review of the questions of law and fact involved in a decision of the Board of United States General Appraisers in the above case, and the said court having ordered the Board to transmit to said court the record, evidence, exhibits, and samples, together with a certified statement of the facts involved in the case and its decision thereon:

Now, therefore, pursuant to said order, the Board of United States General Appraisers does hereby transmit to said court the record, evidence, exhibits, and samples in said case, together with a certified statement of the facts involved in the case, and also its decision thereon.

This return specifically comprises the following:

Copy of

1. The protests enumerated in the petition, with the reports of the collector of customs relative thereto;

2. A transcript of the testimony taken before the board;

3. The testimony in protests 799171, etc., and 773548, etc., and the testimony and deposition taken under the commission in protest 803766;

4. Exhibits 1 and 2 referred to in the testimony, Exhibit 1, protest 799171, and Exhibits 1 and 2, protests 803766;

5. The entry papers pertaining to protests 850017/18, 850184, 850236/7, 850375, 850821/2, 773548/9, 797324, 799171/2, and 803766;

6. The board's decision in question, G. A. 8235 (T. D. 37927), and judgment order.

Witness the Honorable Jerry B. Sullivan, president of the Board, this first day of May, A. D. 1919.

[Seal Board of United States General Appraisers.]

D. P. DUTCHER,
Chief Clerk.

G. V. O.

Mixed acids.

PROTEST 850017/29.

George C. Holt and Benjamin B. Odell, receivers of Aetna Explosives Company, Incorporated, Equitable Building, 120 Broadway.

NEW YORK, N. Y., *Dec. 19, 1917.*

The Collector of Customs, Port of Ogdensburg, N. Y.

DEAR SIR:

We hereby notify you that we are dissatisfied with the rate and amount of duty fixed and liquidation by you on shipments as specified below.

Ex. C. P. Railway from Drummondville, Quebec, arrived Ogdensburg, N. Y. Entered for manufacturing munitions:

Entry No.	Car.	Arrived.	Entry liquidated.	Duty.
737	4027	Nov. 13, 1917	Dec. 19, 1917	$925.05
774	2961	Nov. 19, 1917	" " "	2,828.55
	2916		" " "	
	2984		" " "	
798	2933	Nov. 22, 1917	" " "	983.45
822	2988	Nov. 26, 1917	" " "	924.00

Warehouse No. —.
Bond No. —.
Duties paid, $5,616.03.
Invoice No. —.
Dated at —.
Liquidated Dec. 19, 1917 as mixed acid at the rate of 15%.

We claim that the mixed acid in question is dutiable as sulphuric acid or nitric acid at the rate of free under paragraph 387, act of 1913.

We therefore claim that we have been required to pay $5,616.03 in excess of the amount of duties legally assessable.

Respectfully,

AETNA EXPLOSIVES CO., INC.
J. L. MALONE.

Notify Aetna Explosives Company, Incorporated, #120 Broadway, New York City.

Received Dec. 29, 1917. U. S. Customhouse, Ogdensburg, N. Y.

REPORT IN PROTEST 850017/29.

UNITED STATES CUSTOMS SERVICE.

PORT OF OGDENSBURG, N. Y., *Jan. 7, 1918.*

To the Board of U. S. General Appraisers, 641 Washington Street, New York, N. Y.:

I submit herewith the protest described below with the accompanying C. V. R. rel'., Invoices and Certified copies of Entries, against my assessment of duty on certain mixed acid claimed to be dutiable as sulphuric acid or nitric acid at the rate of free under par. 387, act of 1913, returned by the appraiser as mixed acid (chemical mixture) and assessed with duty under par. 5, 15%, act of 1913. The requirements of subsection 14 of section 28, act of August 5, 1909, have been complied with by the protestant.

Respectfully,

HENRY HALLAND,
Collector of Customs.

No.	Name of Importer.	Vessel.	Date of entry.
29	Aetna Explosives Co.....	Car #4027	Nov. 13-1917
		Car #3961	" 19-1917
		Car #3916	" " 1917
		Car #3964	" " 1917
		Car #3933	" 22-1917
		Car #3908	" 28-1917

PROTEST 850018/30.

George C. Holt and Benjamin B. Odell, receivers of Aetna Explosives Company, Incorporated, Equitable Building, 120 Broadway.

NEW YORK, N. Y., *December 19, 1917.*

The Collector of Customs, Port of Ogdensburg, N. Y.

DEAR SIR:

We hereby notify you that we are dissatisfied with the rate and amount of duty fixed and liquidation by you on shipments specified below.

Ex. C. P. Railway from Drummondville, Quebec, arrived Ogdensburg, N. Y. Entered for manufacturing munitions:

Entry No.	Car.	Arrived.	Entry liquidated.	Duty.
991	2018	Dec. 18/17	Jan. 2-1918	$945.00

Warehouse No. —.
Bond No. —.
Duties paid $945.00.
Invoice No. —.
Dated at —.
Liquidated — as mixed acid at the rate of 15%.

We claim that the mixed acid in question is dutiable as sulphuric acid or nitric acid at the rate of free under paragraph 387 act of 1913.

We therefore claim that we have been required to pay $945.00 in excess of the amount of duties legally assessable.

Respectfully,

AETNA EXPLOSIVES CO., INC.
J. L. MALONE.

Notify Aetna Explosives Co., 120 Broadway, New York City.
$1.00 protest fee.

REPORT IN PROTEST 850018/30.

UNITED STATES CUSTOMS SERVICE.

PORT OF OGDENSBURG, N. Y., *Jan. 7, 1918.*

To the Board of U. S. General Appraisers, 641 Washington Street, New York, N. Y.:

I submit herewith the protest described below with the accompanying invoice and certified copy of entry, against my assessment of duty on certain mixed acid claimed to be dutiable as sulphuric acid or nitric acid at the rate of free under Par. 387, act of 1913, returned by the appraiser as mixed acid (chemical mixture) and assessed with duty under par. 5 15%, act of 1913. The requirements of subsection 14 of section 28, act of August 5, 1909, have been complied with by the protestant.

Respectfully,

HENRY HALLAND,
Collector of Customs.

No.	Name of importer.	Vessel.	Date of entry.
30	Aetna Explosives Co.	Car 2018	Dec. 22/1917

LETTER OF COLLECTOR.

TREASURY DEPARTMENT,
UNITED STATES CUSTOMS SERVICE,
Ogdensburg, N. Y., Jan. 8, 1918.

Board of U. S. General Appraisers, 641 Washington Street, New York, N. Y.

SIR:

With reference to the enclosed protests against my assessment of duty on certain mixed acids, you are advised that no samples of the merchandise are being submitted, as it is understood by this office that the merchandise is of an explosive nature and there would be danger in forwarding samples either through the mails or by express.

This office was advised by the shippers that the acid contains 20% sulphuric acid, 73% nitric acid, and 7% water, approximately.

Respectfully.

HENRY HALLAND,
Collector.

PROTEST 850184/31.

Aetna Explosives Company, Inc., Equitable Building, #120 Broadway.

NEW YORK, N. Y., *January 14, 1918.*

The Collector of Customs, Port of Ogdensburg, N. Y.

DEAR SIR:

We hereby notify you that we are dissatisfied with the rate and amount of duty fixed and liquidation by you on shipments as specified below.

Ex. C. P. Railway from Drummondville, Quebec; arrived Ogdensburg, N. Y., 12/20/17.

Entered for manufacturing munitions.

Entry No. 885.

Warehouse No. —.

Bond No. —.

Duties paid —.

Invoice No. —.

Dated at —.

Liquidated Dec. 26, 1917, as mixed acid at the rate of 15%.

We claim that the mixed acid in question is dutiable as sulphuric acid or nitric acid at the rate of free under paragraph 387, act of 1913, of Treasury Decision 36,000, dated Dec. 13th, 1915. We

therefore claim that we have been required to pay $962.40 in excess of the amount of duties legally assessable.

Respectfully,

AETNA EXPLOSIVES CO., INC.
J. L. MALONE, *T. M.*

Notify Aetna Explosives Company, Incorporated, #120 Broadway, New York City.

A E X Car 2059.

REPORT IN PROTEST 850184/31.

UNITED STATES CUSTOMS SERVICE.

PORT OF OGDENSBURG, N. Y., *Jan'y 18, 1918.*

To the Board of U. S. General Appraisers, 641 Washington Street, New York, N. Y.:

I submit herewith the protest described below with the accompanying Trip. invoice and certified copy of entry against my assessment of duty on certain mixed acid claimed to be dutiable as sulphuric acid or nitric acid at the rate of free under Par. 387, act of 1913, of Treasury Decision 36,000 dated Dec. 13/1915.

We therefore claim that we have been required to pay 962.40 in excess of the amount of duties legally assessable, returned by the appraiser as mixed acid 15% and assessed with duty under Par. 5, act of 1913. The requirements of subsection 14 of section 28, act of August 5, 1909, have been complied with by the protestant.

Respectfully,

HENRY HALLAND,
Collector of Customs.

No.	Name of importer.	Vessel.	Date of entry.
31	Aetna Chemical Co.....	Car #2059..	Dec. 18/17.

PROTEST 850236/33.

Aetna Explosives Company, Inc., Equitable Bldg., #120 Broadway, New York.

The Collector of Customs, Port of Ogdensburg, N. Y.

DEAR SIR:

We hereby notify you that we are dissatisfied with the rate and amount of duty fixed and liquidation by you on shipments as specified below.

Ex. C. P. Railway from Drummondville, Quebec, arrived Ogdensburg, N. Y.
Entered for manufacturing munitions.
Entry No. 959.
Warehouse No. —.
Bond No. —.
Liquadated Jan. 17, 1918, as mixed acid at the rate of 15%.

We claim that the mixed acid in question is dutiable as sulphuric acid or nitric acid at the rate of free under paragraph 387, act of 1913, of Treasury Decision 36,000, dated December 13, 1915. We therefore claim that we have been required to pay $935.55 in excess of the amount of duties legally assessable.

Respectfully,

AETNA EXPLOSIVES CO., INC.
J. L. MALONE, *T. M.*

Notify Aetna Explosives Company, Incorporated, #120 Broadway, New York City.
Car 4002 arrived Jan. 10, 1918. Entered Jan. 12, 1918.

REPORT IN PROTEST 850236/33.

UNITED STATES CUSTOMS SERVICE.

PORT OF OGDENSBURG, N. Y., *Jan. 24, 1918.*

To the Board of U. S. General Appraisers, 641 Washington Street, New York, N. Y.:

I submit herewith the protest described below with the accompanying Trip. invoice and certified copy of entry against my assessment of duty on certain mixed acid claimed to be dutiable as sulphuric acid or nitric acid at the rate of free under Par. 387, act of 1913, of Treasury Decision 36,000 dated Dec. 13/15, returned by the appraiser as mixed acid and assessed with duty under Par. #5 at 15%, act of 1913. The requirements of subsection 14 of section 28, act of August 5, 1909, have been complied with by the protestant.

Respectfully,

HENRY HALLAND,
Collector of Customs.

No.	Name of importer.	Vessel.	Date of entry.
33	Aetna Explosives Co., Inc.....	Car #4002..	Jan. 12/18.

PROTEST 850237/32.

Aetna Explosives Company, Inc., Equitable Bldg., 120 Broadway, New York.

The Collector of Customs, Port of Ogdensburg, N. Y.

DEAR SIR:

We hereby notify you that we are dissatisfied with the rate and amount of duty fixed and liquidation by you on shipments as specified below.

Ex. C. P. Railway from Drummondville, Quebec; arrived Ogdensburg, N. Y.
Entered for manufacturing munitions.
Entry No. 940.
Liquidated Jan. 11, 1918, as mixed acid, at the rate of 15%.

We claim that the mixed acid in question is dutiable as sulphuric acid or nitric acid, at the rate of free, under paragraph 387, act of 1913, of Treasury Decision 36,000, dated December 13, 1915. We therefore claim that we have been required to pay $925.95 in excess of the amount of duties legally assessable.

Respectfully,

AETNA EXPLOSIVES CO., INC.
J. L. MALONE, *T. M.*

Notify Aetna Explosives Company, Incorporated, #120 Broadway, New York City.
Car 4030 arrived Jan. 3, 1918—Entered Jan. 4, 1918.

REPORT IN PROTEST 850237/32.

UNITED STATES CUSTOMS SERVICE.

PORT OF OGDENSBURG, N. Y., *Jan. 24, 1918.*

To the Board of U. S. General Appraisers, 641 Washington Street, New York, N. Y.:

I submit herewith the protest described below, with the accompanying trip. invoice, and certified copy of entry, against my assessment of duty on certain mixed acid, claimed to be dutiable as sulphuric acid or nitric acid, at the rate of free, under par. 387, act of 1913, of Treasury Decision 36,000, dated Dec. 13, 1915, returned by the appraiser as mixed acid at 15%, and assessed with duty under

par. #5, act of 1913. The requirements of subsection 14 of section 28, act of August 5, 1909, have been complied with by the protestant.

Respectfully,

HENRY HALLAND,
Collector of Customs.

No.	Name of importer.	Vessel.	Date of entry.
32	Aetna Explosives Co., Inc.....	Car #4030..	Jan. 4/18.

PROTEST 850375 34.

Aetna Explosives Company, Inc., Equitable Building, #120 Broadway, New York.

The Collector of Customs, Port of Ogdensburg, N. Y.

DEAR SIR:

We hereby notify you that we are dissatisfied with the rate and amount of duty fixed and liquidation by you on shipments as specified below.

Ex. C. P. Railway from Drummondville, Quebec; arrived Ogdensburg, N. Y.
Entered for manufacturing munitions.
Entry No. 972.
Duties paid Jan. 18, 1918.
Invoice No. 18230, dated at Montreal, Dec. 17, 1917.
Liquidated Jan. 28, 1918, as mixed acid, at the rate of 15%.

We claim that the mixed acid in question is dutiable as sulphuric acid or nitric acid, at the rate of free, under paragraph 387, act of 1913, of Treasury Decision 36,080, dated December 13, 1915.

We therefore claim that we have been required to pay $1,110.90 in excess of the amount of duties legally assessable.

Respectfully,

AETNA EXPLOSIVES CO., INC.
J. L. MALONE, *T. M.*

Notify Aetna Explosives Company, Incorporated, #120 Broadway, New York City.
Car 8003 arrived Jan. 9, 1918. Entered Jan. 18, 1918. Liquidated Jan. 28, 1918.
$1.00 paid Jan. 31, 1918. Ogdensburg, N. Y. Per T. J.

REPORT IN PROTEST 850375/34.

UNITED STATES CUSTOMS SERVICE.

PORT OF OGDENSBURG, N. Y., *Feb'y 1st, 1918.*

To the Board of U. S. General Appraisers, 641 Washington Street, New York, N. Y.:

I submit herewith the protest described below with the accompanying trip. Invoice and certified copy of entry, against my assessment of duty on certain mixed acid claimed to be dutiable as sulphuric acid or nitric acid at the rate of free under par. 387, act of 1913, of Treasury Decision 36,000, dated Dec. 13/15, returned by the appraiser as mixed acid at 15%, and assessed with duty under par. 5, act of 1913. The requirements of subsection 14 of section 28, act of August 5, 1909, have been complied with by the protestant.

Respectfully,

HENRY HALLAND,
Collector of Customs.

No.	Name of importer.	Vessel.	Date of entry.
34	Aetna Chemical Co.....	Car # 8003..	Jan. 18/18

PROTEST 850821/35.

Aetna Explosives Company, Inc., Equitable Building, #120 Broadway, New York.

The Collector of Customs, Port of Ogdensburg, N. Y.

DEAR SIR:

We hereby notify you that we are dissatisfied with the rate and amount of duty fixed and liquidation by you on shipments as specified below.

Ex. C. P. Railway from Drummondville, Quebec; arrived Ogdensburg, N. Y.
Entered for manufacturing munitions.
Entry No-. 1015 & 1019.
Cars 8033 & 2063.
Duties paid $2,088.45.
Invoice No. 1122 dated at Montreal, Jan. 22, 1918.
Liquidated Feb'y 18, 1918 as mixed acid at the rate of 15%.

We claim that the mixed acid in question is dutiable as sulphuric acid or nitric acid at the rate of free under paragraph 387, act of 1913, of Treasury Decision 26,000 dated December 13, 1915.

We therefore claim that we have been required to pay $2,088.45, in excess of the amount of duties legally assessable.

Respectfully,

AETNA EXPLOSIVES CO., INC.
J. T. MALONE, *T. M.*

Notify Aetna Explosives Company, Incorporated, #120 Broadway, New York City.
Feb. 22, 1918.

Received Feb. 22, 1918, U. S. Custom House, Ogdensburg, N. Y.

REPORT IN PROTEST 850821/35.

UNITED STATES CUSTOMS SERVICE.

PORT OF OGDENSBURG, N. Y., *Feb'y 27/18.*

To the Board of U. S. General Appraisers, 641 Washington Street, New York, N. Y.:

I submit herewith the protest described below with the accompanying trip. Invoice and certified copy of entry, against my assessment of duty on certain mixed acid claimed to be as sulphuric acid or nitric acid at the rate of free under par. 387, act of 1913, of Treasury Decision 36000 dated Dec. 13, 1915, returned by the appraiser as mixed acid at 15% par. 5, and assessed with duty under par. 5, act of 1913.

The requirements of subsection 14 of section 28, act of August 5, 1909, have been complied with by the protestant.

Respectfully,

HENRY HALLAND,
Collector of Customs.

No.	Name of importer.	Vessel.	Date of entry.
35	Aetna Chemical Co.....	Cars # 8033-2063.	Feby. 13/18

PROTEST 850822/36.

Aetna Explosives Company, Inc., Equitable Building, #120 Broadway, New York.

The Collector of Customs, Port of Ogdensburg, N. Y.

DEAR SIR:

We hereby notify you that we are dissatisfied with the rate and amount of duty fixed and liquidation by you on shipments as specified below.

Ex. C. P. Railway from Drummondville, Quebec; arrived Ogdensburg, N. Y.
Entered for manufacturing munitions.
Entry No. 1019.
Cars 2028 and 4027.
Duties paid $1,922.55.
Invoice No. 1158 dated at Montreal Jan. 23, 1918.
Liquidated Feb'y 18, 1918, as mixed acid at the rate of 15%.

We claim that the mixed acid in question is dutiable as sulphuric acid or nitric acid at the rate of free under paragraph 387, act of 1913.

We therefore claim that we have been required to pay $1,922.55, in excess of the amount of duties legally assessable.

Respectfully,

AETNA EXPLOSIVES CO., INC.
J. L. MALONE, *T. M.*

Notify Aetna Explosives Company, Incorporated, #120 Broadway, New York City.
Feb. 22, 1918.

Received Feb. 22, 1918, U. S. Customhouse, Ogdensburg, N. Y.

REPORT IN PROTEST 850822/36.

UNITED STATES CUSTOMS SERVICE.

PORT OF OGDENSBURG, N. Y., *Feb'y 27/18.*

To the Board of U. S. General Appraisers, 641 Washington Street, New York, N. Y.:

I submit herewith the protest described below with the accompanying Trip. Invoice, and certified copy of entry, against my assessment of duty on certain mixed acid claimed to be dutiable as sulphuric acid or nitric acid at the rate of Free under par. 387, act of 1913 of Treasury Decision 3600 dated Dec. 13, 1915, returned by the appraiser as mixed acid at 15%, par. 5, and assessed with duty under par. 5, act of 1913.

The requirements of subsection 14 of section 28, act of August 5, 1909, have been complied with by the protestant.

Respectfully,

HENRY HALLAND,
Collector of Customs.

No.	Name of importer.	Vessel.	Date of entry.
36	Aetna Chemical Co.....	Cars 2028–4027..	Feby. 13/18

TESTIMONY FOR THE IMPORTER.

BOARD OF U. S. GENERAL APPRAISERS.

In the Matter of Protests Nos. 850017, 850018, 850184, 850236, 850237, 850375, 850821, and 850822 of the AETNA EXPLOSIVES COMPANY.

BEFORE BOARD 1.

Present:

General Appraiser MCCLELLAND.
General Appraiser SULLIVAN.
General Appraiser BROWN.

NEW YORK, N. Y., *October 3, 1918.*

Appearances:

Winthrop & Stimson, by A. S. Pratt, Esq., and George Roberts, Esq., of counsel for the protestants.

Bert Hanson, Esq., Assistant Attorney General, and Charles D. Lawrence, Esq., special attorney, for the United States.

Mr. Pratt. This morning the protests before the Board cover certain Ogdensburg entries. There are fifteen cars which were entered at Ogdensburg, imported from Canada, destined to Emporium, Pennsylvania, from November 12, 1917, to January 17, 1918, coming from Drummondville, Canada, fifteen cars. They were entered by us as nitric acid and claimed to be free of duty. They were returned by the collector as a chemical mixture and therefore subject to a duty of fifteen per cent, the inspector having returned them as mixed acid. As a matter of fact they were invoiced by ourselves under the designation mixed acid because that was the requirement of the railway regulations, it not being nitric acid but being nitric and sulphuric acids mixed together solely for the purpose of protection in transportation. That I think briefly states the case.

Mr. Lawrence. If the Board please I desire at this time to correct one statement made by Mr. Pratt, which was to the effect that these goods were entered free, entered as nitric acid.

Mr. Pratt. Claimed to be free; I didn't say entered free.

Opening statement of Mr. Pratt repeated by the reporter.

Mr. Lawrence. As a matter of fact they were entered not as nitric acid but as mixed acid and in all but one instance entered at fifteen per cent. In the exception they were entered free, but as nitric acid in every instance.

Mr. Pratt. I think you are mistaken, Mr. Lawrence; there is an entry right there, mixed acid free.

Mr. Lawrence. That is the exception.

Gen. Appr. McClelland. I don't think it makes any differ-

ence how they were entered or claimed to be; it is a question of what they were held to be.

Mr. Pratt. They are described in the entries apparently under the names mixed acid, and under the column rate of duty when the entry was prepared and filed it was stated free.

Mr. Lawrence. That is with respect to protest 850017———

Gen. Appr. McClelland. I don't think you are prejudiced at all, Mr. Pratt, if you voluntarily entered them as mixed acid.

Mr. Pratt. No, I don't think so, but I don't want to misstate the facts and I thought they were all like that. Is that all right then with that correction?

Mr. Lawrence. Yes, sir.

H. L. WOLLENBERG, called as a witness on behalf of the Protestants, having duly sworn, testified as follows:

By Mr. Pratt:

Q. Mr. Wollenberg, what is your position, please? A. I am general manager for the receivers of the Aetna Explosives Company.

Q. And how long have you been general manager? A. I have been general manager for the receivers since their appointment in April, 1917.

Q. Were you with the company before that time? A. And I was general manager for the company from the previous December, 1916, and was director of the Engineering and construction for the company from the previous June, 1916.

Q. So you have been with the company something over two years and a half at the present time? A. Something over two years and a quarter, possibly.

Q. Now, you are an engineer by profession and education, are you not? A. I am a mining engineer by education. My technical training included metallurgical and chemical work to the extent that it is customary in mining engineering courses. By practice I am a general engineer and executive, as I have followed a number of lines of work besides mining engineering.

Q. You have a chemical education, though? A. I have had the chemical education that is usual in the metallurgical end of mining engineering.

Q. What is the business of the Aetna Explosives Company? A. It is the—the business of the Aetna Explosives Company is the manufacture and sale of explosives for domestic use, which means mining, quarrying, and similar purposes, and also of military explosives since the beginning of this war.

Q. You mean since 1914? A. I think there were none manufactured before 1915.

Q. You have a large business in those two lines, have you not? A. Our business for the last year amounted to about $45,000,000 sales value, of which approximately, well, roughly 90 per cent per-

haps was military business and roughly ten per cent commercial business.

Q. By military you mean—the word munitions can be used as describing military explosives with sufficient accuracy, can it not, it covers trinitrotoluol and other forms of high explosives? A. When I say military explosives I mean a considerable number that are used in the manufacture of munitions for military purposes.

Q. Now, in the manufacture of such munitions is it necessary to use nitric acid?

Mr. Lawrence. I must object, if the Board please, the qualifications of this witness to answer this question and several that he has already answered have not been developed.

Mr. Pratt. Not sufficiently, do you think?

Gen. Appr. McClelland. I don't think you have shown, Mr Pratt, that he is familiar with the technical manufacturing.

Mr. Pratt. I didn't suppose it would be questioned.

Q. Mr. Wedlenberg, you have been with the company since June, 1916? A. Yes.

Q. What has been your personal line of work since that time with the company, in other words, have you had personal experience with the processes of manufacture of the products which the company makes as well as the commercial end of the business? A. At the commencement of my engagement with the company I spent my time in studying the operations of the plant, particularly from the standpoint of increasing their efficiency either by improvement in mechanical facilities or by modifications of processes.

Q. Chemical processes? A. Yes. Although my own skill was chiefly along the mechanical lines I had to become entirely familiar with the chemical processes in order to approach the proper mechanical solution of the conditions required. As manager of the company I have been in direct and continuous touch with all the processes used by the company, and am always informed of any changes that are suggested by the technical staff and no such changes are finally made without my approval.

Q. Did you then personally become familiar with the various processes in use in your plant in making munitions? A. I did.

Q. And you have visited, of course, I suppose, all the different plants owned by the company? A. Well, there is one of the high explosive plants which I haven't visited.

Q. Aside from that one you have? A. I have.

Q. I understand it is a true statement that before this war the business of manufacturing what I call munitions, that is high military explosives, was practically unknown in this country? A. Was on a negligible scale.

Q. The manufacture was on an exceedingly small scale? A. That is correct.

Q. And the European War increased the demand for such things in this country tremendously? A. That is correct.

W. L. Wollenberg.

Q. So that the business of manufacturing what you call military explosives on a large scale was something that had to be developed, as we might call it? A. That is correct.

Q. Developed by experience as you went along, and you were in that line of work developing it, as everyone else was, the du Ponts and everybody else as well? A. That is correct.

Q. Now, I will come back to my other question: In the manufacture of military explosives do you use nitric acid?

Mr. Lawrence. That is objected to on the ground that so far as this proceeding has gone nothing has been said about nitric acid being the subject of importation or being covered by these protests; therefore I submit it is immaterial and incompetent.

Mr. Pratt. I said so in my opening.

Mr. Lawrence. I know you said so, but there is no proof.

Gen. Appr. McClelland. Objection overruled.

Mr. Lawrence. Exception.

Q. Do you use nitric acid in the manufacture of explosives, munitions of war? A. We use nitric acid in the manufacture of every explosive that we make.

Q. Not only powder that is for domestic use, but also for munitions of war? A. That is correct.

Q. And it is necessary to use nitric acid, is it not? A. It is essential.

Q. It is an essential one of the ingredients? A. It is.

Q. Do you in your own plants in this country make sufficient nitric acid for your own uses in the manufacture of these war explosives? A. We do not at this time.

Q. And did you in the fall of 1917? A. We did not.

Q. What was the condition which brought about the beginning of the importations of this nitric acid from Canada in the fall of 1917?

Mr. Lawrence. That is objected to on the ground it is immaterial.

Gen. Appr. McClelland. I don't see the materiality of that, Mr. Pratt.

Mr. Pratt. I don't think it is very material.

Gen Appr. McClelland. The fact that it has been imported is sufficient.

Mr. Pratt. I don't think it is at all material, I was simply going to show that some additional orders for large quantities required an increase in the supply of nitric acid.

Gen. Appr. McClelland. Objection sustained. It don't make any difference what induced the importer to go abroad to buy the merchandise, the fact that he has brought it in is sufficient.

Q. Your company did, beginning with September, 1917, or rather with—yes, beginning with September, 1917, and a period covered by

these particular protests here, November, 1917, import from a plant which you own in Canada at Drummondville into this country for use in your plants here in the making of war munitions nitric acid, did you not? A. We did.

Mr. Lawrence. I must object to that, the counsel is leading the witness unconscionably, there is nothing in the way of proof to show this witness has imported nitric acid in the period stated.

Mr. Pratt. The protest is in evidence.

Mr. Lawrence. The protest don't show nitric acid has been imported; the papers show a certain mixed acid has been imported over a period of time.

Mr. Pratt. All right, we will put this in right now.

Mr. Lawrence. I ask for a ruling on my objection, and as the question was answered I ask that the answer be stricken out.

Gen. Appr. McClelland. Your objection will be sustained at the present time and the answer will be stricken out.

Mr. Pratt. Exception.

Gen. Appr. McClelland. It may develop all this talk about nitric acid is wholly immaterial, unless it appears that nitric acid was imported.

Mr. Pratt. I offer in evidence this statement which Mr. Lawrence and I have agreed the witnesses if produced would testify is a correct analysis according to weight and value of the particular cars imported at Ogdensburg and covered by these protests here.

Gen. Appr. McClelland. Is there objection to that?

Mr. Lawrence. There is one inaccuracy in the statement, that we agreed to the correctness of the statements. When the matter was put up to our office we replied that while not admitting the correctness of the statement on the schedule now offered, we would not object to the offer of it with the understanding that the employees of the Aetna Explosives Company who prepared the statement would if called testify in accordance with the facts therein.

Gen. Appr. McClelland. That is to say, you are willing the paper should go in, but you don't subscribe to the correctness of the propositions stated?

Mr. Lawrence. In other words, we don't object to the paper with the understanding that the witnesses who made out the statement would, if called before your honors, testify in accordance with the facts developed on that schedule.

Mr. Pratt. That is what I tried to say.

Gen. Appr. McClelland. I don't quite understand your last statement amounts to an objection at all, you say with the understanding if they were called they would testify to the facts as set forth.

Mr. Lawrence. Yes.

Gen. Appr. McClelland. With that understanding you do not object?

Mr. Lawrence. I do not object to the reception of the schedule with the understanding that the——

Gen. Appr. McClelland. Admitted, and mark it Exhibit 1.

Schedule received in evidence and marked Exhibit 1, 850017, etc., October 3, 1918.

Mr. Pratt. Now, it appears from this exhibit, your honors, that the contents of each car were analyzed as to weight and as to value, and that the average contents of each car were 20.16 of sulphuric acid with 72.28 of nitric acid, the balance, of course, being water. That doesn't appear in the statement, but that will be admitted, will it not, the balance between the total of nitric and sulphuric and 100 being water?

Mr. Lawrence. Yes.

Mr. Pratt. And that the average by value of the sulphuric acid is 5.04 and of the nitric acid 94.96.

Q. Now, Mr. Wollenberg, to go back to my question, does the company which you are manager of use nitric acid in the manufacture of its war explosives? A. It does.

Gen. Appr. McClelland. But it is all mixed with other chemicals? A. Always mixed with other chemicals.

Q. Can you use and do you use in the manufacture of your explosives the commodity which was imported from Drummondville in the form in which it was imported, that is, in the proportions on the average of 20 per cent sulphuric and 72½ per cent nitric?

Mr. Lawrence. That is objected to on the ground it is immaterial and incompetent.

Mr. Pratt. It is quite material to show that they do not use this in the form in which it was imported.

Mr. Lawrence. If the Board please, the issue raised by these protests is simply this, is the merchandise which was imported dutiable as a chemical mixture or is it, as claimed in the protest, dutiable as sulphuric acid or nitric acid at the rate of free under paragraph 387 of the act of 1913? Now, neither of these paragraphs which we are concerned with in this case specify use as a determining factor.

Gen. Appr. McClelland. What paragraph was it assessed under?

Mr. Lawrence. Under paragraph 5.

Mr. Pratt. No; it is claimed to be free of duty under paragraph 387 and assessed under paragraph 5 as a chemical mixture.

Gen. Appr. McClelland. I think that objection is good, Mr. Pratt, the classification——

Mr. Pratt. May I say a word on that subject before your honors rule?

W. L. Wollenberg.

Gen. Appr. McClelland. Yes.

Mr. Pratt. Your honors will remember the Benzol Products case, which was decided by this Board in 1915, I think the winter of 1915, about three years ago, and in which it was shown that nitric acid which contained three per cent by value of sulphuric acid, there being nothing to indicate the percentage by weight, was entitled to free entry as nitric acid and was not dutiable as a chemical mixture.

Gen. Appr. McClelland. But the Board has recanted.

Mr. Pratt. I do not take it you have recanted, because it was stated in the opinion in the Nonnabo case that it was a mixture in substantial proportions, and that was the difference between that and the Benzol Products case.

Gen. Appr. McClelland. The trouble was the Board was misled by the three per cent, especially the General Appraiser, who wrote the opinion.

Mr. Pratt. I shall show today one thing, on today's values this percentage is three per cent by value. Let me continue, if yours honors please, in that case your honors stated, in effect, this: That the evidence showed that this sulphuric was added to the nitric solely for the purpose of enabling it to be transported in tank cars, which I shall also show was the case here, not for any other purpose, and that the mixture was not imported to be used in the condition in which it was when imported, but that before it was used or could be used in the processes of manufacture for which it was intended a considerable additional amount of sulphuric had to be added; that is what I propose to show here. In other words, I claim the case now before the Board is exactly like the Benzol Products case, the only possible difference being that at the time of importation because of higher prices of sulphuric than prevailed in 1915, when the Benzol case arose, our proportion by value of sulphuric to nitric is five per cent instead of three per cent, but the purpose of adding the sulphuric was exactly the same as the purpose in the Benzol Products case; it was added solely for the purpose of enabling us to bring in the nitric acid, which we couldn't bring in any other way at all; without the sulphuric we couldn't transport it at all.

Gen. Appr. Sullivan. Then the question will be what was its condition on the date of importation.

Mr. Pratt. Yes. That I have proven by this table, this analysis. Now, I want to go further, and I think by your Board's decision I have the right to go further, and show the acid in the condition in which it was imported was not useable without the addition to it of a great amount of sulphuric acid.

Gen. Appr. Sullivan. Our idea is that its use in this country for whatever it may be used for wouldn't be material. What was its condition as imported, showing the ingredients then, is the question.

W. L. Wollenberg.

Mr. Pratt. But your honor has decided the Benzol case on that particular proposition; may I read what you say in the Nonnabo case when you refer to the decision in the Benzol Products case?

Gen. Appr. McClelland. There are cases without number where the Board has held it is the condition of the merchandise as imported that determines its classification, and not its subsequent use, or whatever might be done to it subsequently.

Mr. Pratt. I grant your honor that is perfectly true——

Gen. Appr. McClelland. So I can't see the materiality of the question as to whether this is used as it is brought in or whether it is changed before being used.

Mr. Pratt. It has a bearing on this point, you can not bring in the nitric acid without the addition of sulphuric.

Gen. Appr. McClelland. Of course that is a matter for proof.

Mr. Pratt. And this has a bearing on that, we don't add it for any purpose except to bring it in.

Gen. Appr. McClelland. You can prove that directly without reaching it in this indirect way. We sustain the objection.

Mr. Pratt. May I read what your honor said in the Nonnabo case when you referred to the decision in the Benzol case? The testimony shows, in this latter decision your honors said that the acids are mixed in these proportions, which were about 47 per cent sulphuric and 48 per cent nitric, that they were mixed in these particular proportions for the purpose of the most economical use and also to secure nitric acid of the requisite concentration to be used in the factory. In other words you permitted evidence to be adduced to show the purpose for which the importation was to be used, just as you did in the Benzol case. That is all I ask to show here, what your honors permitted the importers to show in both those cases. I think it is perfectly competent, at least it can't prejudice anyone. Let me go on and state further what your honors laid down in the Nonnabo case, in referring to the decision in the Benzol case, but that case is not controlling in the case at bar because we have here a mixture of substantial proportions, and also because of the further fact that it is used in the form of the mixture and in the proportions as imported for manufacturing purposes, which was not true in the Benzol case. Now, under those two decisions of this Board it seems to me it is not doing anyone any harm and I ought to be permitted to show these same facts were true.

Gen. Appr. Sullivan. What was the question?

Last question by Mr. Pratt (on page 13) repeated by the reporter.

Gen. Appr. Sullivan. The proposition is what was its constituents and why were nitric acid and sulphuric acid used, what was it—why was it introduced. That question I think is objectionable.

Mr. Pratt. All right, I will withdraw that question and put it as your honors suggest. Have you sustained the objection?

Gen. Appr. McClelland. The objection is sustained to the question in that form.

Mr. Pratt. Then I will take exception.

Q. Now, Mr. Wollenberg, just state please—this schedule has been admitted which shows the commodity imported contained approximately 20 per cent sulphuric and 72¼ per cent nitric acid—will you tell the Board why you imported that commodity in just that form with just those two percentages of nitric and sulphuric?

Mr. Lawrence. That is objected to on the ground that it is immaterial, why they imported it in that mixture, in those percentages.

Gen. Appr. McClelland. Objection overruled.

Mr. Lawrence. Exception.

A. Our purpose was to add to the nitric acid produced in our plant in Canada the minimum amount of sulphuric acid which would insure its safe transportation in tank cars as that was the only manner in which we could successfully and practically transport the nitric acid which we could produce in Canada and which we had to use in the United States.

Q. What was the amount of this commodity which you import per month from Drummondville into the United States?

Mr. Lawrence. That is objected to on the ground it is immaterial.

Gen. Appr. McClelland. Since objection has been made, Mr. Pratt, what is the materiality of that question?

Mr. Pratt. It is very material to show it couldn't have been transported in anything other than tank cars. You may transport nitric acid in glass carboys, but to transport the large quantity per month we had to import, we couldn't get glass carboys, they weren't to be had.

Gen. Appr. McClelland. But are we to set aside the law on a matter of convenience or economy? Suppose the law provides for a duty on chemical mixtures: is the provision of the law, the provision for duty to be set aside because of convenience to the importer, or inconvenience?

Mr. Pratt. If you want me to argue the point now I would answer it this way, there are two elements—admitting for the sake of argument that it is a chemical mixture because there are two chemicals mixed together, yet there is a phrase in the tariff act that nitric acid is free of duty by name, eo nomine. Now, if you can not import nitric acid into this country in quantities except by the addition of sulphuric acid as a container, that doesn't make a chemical mixture.

Gen. Appr. McClelland. I wouldn't at this time be understood as indicating whether I have any views that this was a

chemical mixture or nitric acid, but what I refer to now is the fact, having in mind the character of this testimony, I would just suggest that the one provision or the other is not to be disregarded because of the question of convenience one way or the other to the importer in bringing goods into the country.

Mr. Pratt. I will grant your honor that, perhaps, but which paragraph applies is dependent very largely upon whether you can bring in one or the other without the addition of something as a container for example. That is rather poorly expressed, but if you can't bring in nitric acid as nitric acid in any appreciable quantities except in sulphuric acid as a container I ought to be permitted to show that sulphuric is added solely for the purpose of a container, and I ought to be permitted to show the quantity required for that purpose.

Gen. Appr. McClelland. Objection sustained.

Mr. Pratt. Exception.

Q. You said, Mr. Wollenberg, that this was added solely for the purpose of making it possible to transport the nitric acid in tank cars, did you not? A. I did.

Q. In other words what you desired to import was nitric acid? A. It was.

Q. And I take it that you could not import nitric acid in tank cars except by the addition of sulphuric acid to a greater or less extent? A. It would be impossible as a practical matter because the nitric acid would dissolve the tank car.

Q. The nitric acid would eat the iron of the tank car? A. Yes, sir.

Q. Well, does the addition of sulphuric to the nitric acid make it so that the resultant mixture has less effect upon the tank car, less corrosive effect? A. It does, and there are certain proportions which make the effect on the tank car practically negligible, although there is always a slight amount of corrosion in the shipment of any acids.

Q. Of course nitric acid, I understand, always contains some water, does it not? A. As manufactured or as used it always contains some water.

Q. And it is true, is it not, that the greater the percentage of water the greater the corrosive effect of the acid on the tank car? A. That is true.

Q. And sulphuric added to the nitric brings about this result, does it not; it combines with some of this water and thereby in that way reduces the corrosive effect on the car?

Mr. Lawrence. If the Board please, I want to insist on the witness testifying instead of Mr. Pratt.

Q. That is quite true. May I ask you to explain, Mr. Wollenberg, the chemical process by which the addition of sulphuric acid to the nitric produces the effect that the corrosive action on the tank

car is less than that of nitric alone? A. Well, explaining it in a very simple way for a layman I might say that anhydrous or perfectly dry nitric acid, that is not containing any water, would not have any substantial effect on iron. Now, sulphuric acid has, what I can call in popular language, a greater affinity for water than nitric has, and in a mixture of the three substances, nitric acid, sulphuric acid, and water, the sulphuric acid has the effect of holding the water in such a way that the nitric does not act, does not in effect have the water with it, and therefore does not act upon the iron. The exact amount of sulphuric acid that has to be present to accomplish the purpose will depend on the amount of water that is with the nitric acid, on the temperature to which the mixture is exposed, and on the degree of protection which is desired. There is no absolutely sharp line where the action of nitric on iron definitely starts or definitely is prevented.

Gen. Appr. McClelland. In your experience have you known nitric acid to be transported without having a proportion of sulphuric acid added? A. Never, except in glass carboys or containers, special containers other than iron.

Q. It is true it is never transported in that form, is it not? A. Nitric acid is never transported in that form, it is an impossibility; it wouldn't be permitted by the railway regulations.

Gen. Appr. McClelland. As a matter of fact isn't it a question of convenience, this mixture, it could be imported in glass jars without being mixed? A. Not in high strengths under the regulations of the Interstate Commerce Commission.

Q. What do you mean by high strengths? A. The Interstate Commerce Commission has a provision for the transportation of nitric acids, and there are a number of regulations. At high strengths I believe it can be transported in small bottles, seven pound bottles packed in a certain way, and at certain other strengths it can be transported in glass carboys surrounded with noninflammable material and packed in a proper way fitted with iron containers or other noninflammable material, and in lower strengths it can be transported in glass carboys properly crated in wooden crates.

Q. Now, take these particular importations in question here, could this nitric acid of the strength which it had have been imported by you in glass carboys or glass bottles?

Mr. Lawrence. Just a minute, I don't think it has been shown, your honors, what the strength of this mixture was.

Q. Well, I will ask you, what does the strength—take this table, refer to that and tell me what the strength of the nitric acid in those cars was. By strength use the word in the way in which it is

used by the Interstate Commerce Commission as you referred to the regulations? A. This table shows the average content of these cars was 20.16 per cent sulphuric, 72.28 per cent nitric, and the balance being water would be 7.56 per cent water. Now, in order to arrive at the strength of the nitric acid which went into making that mixture I have to take the fact into account that the mixture was made by adding oleum to the nitric acid which was produced.

Q. That you know of your own personal knowledge? A. I know that of my own knowledge; I din't see the operations, but that is the manner in which it was directed to be done, and the only method it could be done.

Q. What is oleum? A. Oleum is sulphuric acid which in a sense is supersaturated or contains an amount of anhydrous gas which with water makes sulphuric acid so that it has the power or property rather of being mixed with a certain amount of water and then giving 100 per cent sulphuric acid, and so it is referred to as being 104½ per cent strength, which means that it has the capacity of being mixed with water and still giving 100 per cent sulphuric acid because it has some gas dissolved in it. Now, I have made a computation——

Q. First, that is what you added to the nitric which you had? A. We added 104½ per cent sulphuric, which is known as oleum, to the nitric acid produced in order to make the material that is represented by this analysis.

Q. And I understand, is it correct, that the addition of oleum instead of the addition of sulphuric acid takes up more of the free water in the nitric than if you had added only sulphuric? A. That is true, and by using oleum for the mixture we are enabled to add a lesser amount of sulphuric and to have a lesser amount of sulphuric in the final composition.

Q. And a greater amount of nitric? A. And a greater amount of nitric than we would if we had added some weaker form of sulphuric acid.

Q. Yes: now go ahead. A. 100 pounds of this final composition as shown on this statement contains 20.16 pounds of H_2SO_4.

By Mr. Lawrence:

Q. How many pounds? A. 20.16 pounds: that is from the record.

Q. Oh, yes. A. Which corresponds to 19.29 pounds of 104½ per cent oleum. The oleum added therefore accounted for the difference between those figures, or .87 pounds of water. If we add this amount of water, .87, to the amount of water in the final composition we have a total water of 8.43. Therefore this amount of water was associated with the nitric which was 72.28 pounds from this record. The total weight of diluted nitric acid therefore was the sum of 8.43 pounds of water and 72.28 pounds nitric, or 80.71 pounds. The strength of the nitric entering into this composition was therefore 72.28 divided by 80.71, or 89.55 per cent. 89.55 per cent nitric

corresponds to a specific gravity at 60 degrees Fahrenheit of 1.4904. The I. C. C. regulations for the transportation of nitric acid provide——

Mr. Lawrence. If the Board please, the statement of the witness, the last few words at least, is not in response to the question. He is branching off.

Gen. Appr. McClelland. It has been so long since the question was propounded I have forgotten what it was.

Question by Mr. Pratt on the bottom of page 25 repeated by the reporter.

Gen. Appr. McClelland. Of course that wouldn't be responsive.

By Mr. Pratt:

Q. Then, in other words, to put it briefly, the strength of the nitric acid which was produced at Drummondville and which you imported into this country was 89.55 per cent nitric, or a specific gravity of 1.4904? A. That is what was shipped in these cars, shown on this record.

Mr. Pratt. I will offer these regulations entitled "Regulations for the transportation of explosives and other dangerous articles by freight" of the Interstate Commerce Commission, effective October 1, 1914. Any objection?

Mr. Lawrence. It is objected to on the ground it is immaterial, irrelevant, and incompetent.

Gen. Appr. Sullivan. Wherein is it incompetent?

Mr. Lawrence. Why, it is not competent evidence in this case.

Gen. Appr. Sullivan. In what way?

Mr. Lawrence. It has no bearing upon the issue.

Gen. Appr. Sullivan. Suppose an article was prohibited from importation by law, and the Interstate Commerce Commission makes a rule permitting them to do that certain thing, and the merchants comply therewith. Whether it is material is another thing, but wouldn't it be competent?

Mr. Lawrence. I don't see that the rulings of the Interstate Commerce Commission would have any bearing upon the United States tariff laws.

Gen. Appr. Brown. Do I understand the objection is only on account of the materiality, not to the form of the proof?

Mr. Lawrence. I don't object to the form it; I object to it as not being competent evidence or material evidence to this case.

Gen. Appr. McClelland. The Board notes the character of the objection made by the Attorney General, but will admit the regulations without in any way committing the Board to the

thought that the Interstate Commerce Commission may adopt a regulation which would in effect nullify a law.

Mr. Pratt. Oh, no; I do not mean to bind your honors as to what weight shall be given. Oh, no; that is a matter for the decision of the Board.

Mr. Lawrence. Exception. May I interrupt just a minute? If your honors please, I understand the protestants have two more witnesses after this one leaves the stand, and the Government has several witnesses who are waiting, and, as they are extremely busy, I thought it might suit their convenience and yours as well if they can be excused until the afternoon session.

Gen. Appr. McClelland. Be back at two o'clock. The witnesses for the Government will be excused until two o'clock this afternoon.

Copy of Interstate Commerce Commission regulations referred to received in evidence and marked Exhibit 2, etc.

Mr. Pratt. I offered the regulations, but I will call particular attention to the sections that are applicable. There are two sections which relate to the shipment of acids, especially nitric acid and what I call mixed nitric and sulphuric, in 1857 and 1858. Perhaps I had better read them to your honors.

Mr. Hanson. What page?

Mr. Pratt. Page 28. "Special attention must be given to bottles or vessels of any kind used for nitric acid. The following containers are authorized for shipment of nitric acid of the specific gravity stated: (1) Glass bottles not exceeding seven pounds capacity, in metal containers. All gravities. (2) Glass bottles not exceeding seven pounds capacity. Not to exceed 1.49 gravity." The only difference is in the second class the bottles do not have to be in a metal container. "Third class, glass carboys, Specification No. 1. Not to exceed 1.43 gravity. Fourth class, glass carboys, metal covered. Not to exceed 1.45 gravity."

Mr. Lawrence. 1.49?

Mr. Pratt. 1.49; thank you. Then it goes on and describes the bottles: "All glass bottles, one and two," that is, not exceeding seven pounds capacity, "must have glass stoppers ground to fit, and these stoppers must be held in place by plaster of Paris covered by strong cloth securely tied. The bottles, well cushioned by material that will not be ignited by the acid, must be packed in strong wooden boxes, barrels, or kegs. When the specific gravity of the acid exceeds 1.49 each bottle must be packed in a tightly closed metal container. Glass carboys, three, must be well cushioned by material that will not be ignited by the acid. Next, a glass carboy, four, containing acid of gravity exceeding 1.43 and not exceeding 1.49, must be well cushioned by incombustible packing material in a tight, cylindrical iron case not less than one-sixteenth of an inch thick that covers the bottom and sides of the carboy and fits tightly. Paragraph

1858. Mixed nitric and sulphuric acids must be shipped in securely closed iron drums that comply with Specification No. 5 or in tank cars complying with master car builders' specifications; or mixed nitric and sulphuric acids may be shipped in carboys, provided these carboys are placed in a tight, cylindrical iron case as prescribed by paragraph 1857 (*d*), and boxed as prescribed in Specification No. 1." So, as I understand these regulations, your honors prohibit the shipment of nitric acid exceeding 1.49 specific gravity in anything, in any kind of container, except a glass bottle not exceeding seven pounds capacity, which glass bottle itself must be in a metal container. Now, with that in view I want to ask the witness, and I would like your honors' permission to repeat the question, as to the amount of nitric acid which was produced in your plant at Drummondville and imported from that plant into this country during the months of September, October, November, and December, 1917.

Mr. Lawrence. That is objected to on the ground it is immaterial.

Mr. Pratt. I think it is material, in view of those regulations, because to ship nitric acid in bottles not holding over seven pounds would be impossible if any quantity——

Gen. Appr. McClelland. The objection will be overruled.

A. I haven't at hand the data to state.

Q. I don't care exactly, but approximately. A. My recollection is that we were producing about—from a million and a half to two and a half million pounds of nitric acid.

Q. Per month? A. Per month.

Q. During that period? A. During that period.

Q. All of which you imported to this country? A. All of which we imported into this country.

Q. For use in making these war munitions? A. That is correct.

Mr. Lawrence. May I have an exception to the objection which I assume was overruled?

Gen. Appr. McClelland. Yes.

Q. Now, Mr. Wollenberg, were the nitric and sulphuric acids mixed in this particular proportion in which that table shows they were mixed for any other purpose than for the purpose of transporting the nitric acid in iron tank cars?

Mr. Lawrence. That is objected to on the ground it is immaterial and incompetent.

Gen. Appr. McClelland. Objection overruled.

Mr. Lawrence. Exception.

A. Only for the purpose of transporting the acid in iron tank cars.

Q. They were not mixed in that proportion because of the fact

that such a proportion would have any reference to the use for which you intended to use the nitric acid?

Mr. Lawrence. That is objected to on the ground it is leading.

Gen. Appr. McClelland. Yes; falling back in your old ways.

Mr. Pratt. If it is leading, I will frame the question so it won't be leading. I will put it this way:

Q. Was the nitric acid and sulphuric acid mixed in this particular proportion for any purpose having to do with the use by your company in your plant in this country of the nitric acid which you desired to import?

Mr. Lawrence. That is objected to on the ground that the answer to the second previous question showed why it was mixed.

Gen. Appr. McClelland. Yes; what was the purpose; then it would be unobjectionable.

Mr. Pratt. This is really putting the other question in a different form, that is all.

Gen. Appr. McClelland. Well, Mr. Lawrence of course objects to the leading character of the question. You can get the same result by asking him for what purpose it was so mixed.

Mr. Lawrence. I will add that to my objection, that it is leading, but my point is that two or three questions back, in response to some question of counsel the witness stated that the only purpose was to comply with certain regulations. Now, he is asking him if it was done for something else.

Gen. Appr. McClelland. No doubt about that, he did that; I thought it was on the ground it was leading. If that is the only objection, we will allow him to answer.

Mr. Lawrence. It was not the only objection; I made two objections, one was that it had already been answered, in effect, and the other was that it was leading.

Gen. Appr. McClelland. I understood his objection to be solely that it was leading, but the last question of course was not. Objection overruled.

Mr. Lawrence. Exception.

Last question by Mr. Pratt repeated by the reporter.

Gen. Appr. McClelland. What was the purpose of mixing it; why can't you state it that way?

Q. What was the purpose of mixing sulphuric with nitric acid in that percentage?

Mr. Roberts. Explain fully.

A. In the processes for which we wish to use this nitric acid the strongest possible nitric acid that we could manufacture and transport

was the required substance. The operation of a nitric plant will not yield pure nitric acid, it has water with it as an inseparable ingredient of the final product——

Q. Can't you just answer the question briefly?

Gen. Appr. Met lelland. He is getting along all right.

A. (Continuing.) We therefore operate our nitric plant in such a manner as to get the nitric-acid product produced therefrom as strong as possible which would enable us to add the minimum amount of sulphuric acid to that acid in order to make it safe to be transported or even possible to be practically transported, and also to give us the final result of as nearly pure and as nearly full-strength nitric acid as we could get. We were under the necessity of paying the freight on the sulphuric acid that was added to this nitric acid, and could have purchased that sulphuric acid at an equal or perhaps lower price in the United States, and therefore there was the commercial incentive as well as the technical requirements to guide us in putting in the least amount of sulphuric acid that would make the material safe for transportation, and there was no other purpose in putting the sulphuric acid in.

Q. Than to make it safe for transportation? A. Than to make it safe for transportation.

Q. When you got that acid down at your plant what did you do with it? A. When this acid reached our explosive plants additional quantities of sulphuric acid, either as oleum or sometimes in small quantities as weaker sulphuric acid, was added to it to make the final mixture that was required in our processes.

Q. To make the final acid mixture which goes into the making of munitions? A. That is correct.

Q. Could it have been used in making these munitions in the condition in which it was when you imported it? A. It could not in any of our processes.

Q. Now, do you know, Mr. Wollenberg, in your experience as a chemist and as a business man, have you ever heard of any mixture of nitric and sulphuric acid containing as small a percentage of sulphuric as this contains—that is, 20 per cent approximately sulphuric—being sold or used in commercial life in the form of that mixture, 20 per cent sulphuric; in other words, is there any use in the trade to which a mixture containing only 20 per cent sulphuric and 75 per cent nitric or 80 per cent nitric, and the balance water, can be put to? A. I know of no direct application into a process of a mixture of that composition, and I only know of the commercial use of a mixture of that composition as a vehicle for nitric acid in order to permit its shipment in tank cars.

Q. What percentages of sulphuric and nitric are used commercially—that is, what percentage of sulphuric with reference to the nitric—for instance, there is a form of sulphuric and nitric acid which is called nitrated acid, is there not? A. There is no specific form which would be referred to in that way without adding the material

which was to be nitrated or in some other way further specifying; the common acids that are used in nitrating operations contain, so far as my knowledge extends, without exception a larger proportion of sulphuric than of nitric.

Q. A larger percentage? A. That is correct, a larger percentage, and it is a percentage of sulphuric in excess of 50 per cent, and more often in excess of 70 per cent or in that neighborhood.

Gen. Appr. Brown. Is that by weight or by volume? A. All these percentages I have stated were by weight.

Q. Then I take it the percentages you use in your manufacturing in your plant contain somewhere in the vicinity of from 50 to 70 per cent sulphuric? A. That is correct, and it is usually nearer 70 than 50.

Q. What is the minimum percentage within your experience of sulphuric acid which mixed with nitric makes the product commercially useable in the form in which it is mixed? A. So far as my knowledge goes it would be in excess of say 45 per cent sulphuric acid.

Q. This table which was put in evidence, Exhibit No. 1, shows that the percentage by value of sulphuric in these cars was 5.04; have you computed the percentage of these importations on present day values of sulphuric and nitric acid for the purpose of ascertaining the percentage of sulphuric by value? A. I have made a calculation of the percentage values in that composition based on the prices which have been announced by the War Industries Board for nitric acid and sulphuric acid, effective September 30, 1918.

Q. Now, what does that computation show the percentage by value of sulphuric acid to be?

Mr. Lawrence. That is objected to on the ground that it is immaterial, irrelevant, and incompetent because it doesn't relate to the period of these shipments at all.

Mr. Pratt. That of course is quite true, it doesn't relate to the period of these shipments, but it is for this purpose: the value of nitric acid and sulphuric acid fluctuate of course a great deal A combination of nitric acid and sulphuric acid which last year contained only three per cent by value of sulphuric might today be five per cent by value. The Benzol Products case was decided, as would appear from the opinion, largely upon the fact that the percentage by value of sulphuric in the combination was so small. Now, I want to show that these very importations we brought in at the prices prevailing in 1917 the percentage of sulphuric was five, and at the prices prevailing today the percentage would be only three, exactly like the Benzol case.

Gen. Appr. Sullivan. Hadn't you better confine yourself to the time of the importations?

Mr. Pratt. Well, in the Benzol——

Gen. Appr. McClelland. I think so.

Gen. Appr. Sullivan. Today might be immaterial as to value.

Mr. Pratt. From one point of view it is immaterial, but from, yes, from another point of view it is quite material.

Gen. Appr. McClelland. Objection sustained.

Mr. Pratt. Exception.

Q. It is true, is it not, Mr. Wollenberg, that the prices of sulphuric and nitric acid fluctuate and have fluctuated considerably in the last three or four or five years? A. They have fluctuated through quite wide ranges compared to any fluctuations which occurred in the pre-war period.

Q. Confining yourself to the period say beginning January, 1915, they have fluctuated considerably in the period from that date down? A. They have fluctuated enormously.

Q. What were the prices in the fall of 1917 as, well now, as compared with the prices in December, 1914?

Mr. Lawrence. I object to that on the ground it is immaterial.

Gen. Appr. McClelland. Your purpose I suppose is to show that in point of value the percentage is infinitesimal or ought not to be considered?

Mr. Pratt. Yes.

Gen. Appr. McClelland. With that view in mind the Board will overrule the objection.

Mr. Lawrence. Exception.

Last question repeated by the reporter.

A. Well, I have no personal knowledge of the prices in 1914, as I was not then——

Gen. Appr. McClelland. If you haven't the knowledge you needn't answer.

Mr. Pratt. Then if you can't answer the question just say so. (No audible response.)

Mr. Pratt. That is all.

By Mr. Lawrence:

Q. Mr. Wollenberg, before you became associated with the Aetna Explosives Company with what concern were you identified? A. I was with the Alaska Gold Mines, as chief engineer of their operations, near Juneau, Alaska.

Q. Have you at any time been connected with the General Chemical Company? A. I have not.

Q. You are a chemist by profession, aren't you? A. I am not; I am a mining engineer by training and profession.

Q. But you are acquainted with nitric acid professionally and practically? A. I am.

W. L. Wollenberg.

Q. With sulphuric acid also, are you? A. I am.

Q. Hydrochloric acid also? A. Not at all.

Q. So-called mixed acids? A. Will you please define what you mean by mixed acids?

Q. Are you familiar with the term mixed acids? A. I am familiar with a term mixed acid.

Q. How has that term been used in your experience? A. It has been used in my experience in two ways; that is why I hesitated to answer the question.

Q. All right, give me the first one. A. In a broad way it is used to indicate any mixture of nitric and sulphuric and, so far as I know, not other acids. In a narrow way, and due to apparently—due apparently to its connection over a considerable period of time with certain mixtures, it has come to be associated with acids that are made up and applied to certain operations. I can amplify by saying that in our own business we qualify the term and we will say nitrocotton mixed acid to indicate an acid which has been mixed in the proportion which is correct for nitrating cotton, and if we want to speak with any definiteness whatever we have to qualify the term mixed acid.

Q. In the first sense in which you used it, as applying to any mixture of nitric and sulphuric acids, how long have you known the term mixed acids in that sense? A. Well, my first connection with the acid industry was my connection with this company in 1916.

Q. 1916; well, what do you say in answer to my question? A. Well, I would say that I have been familiar with the term in both its broad and narrow applications since I first heard it.

Q. When was that? A. In 1916.

Q. You are familiar with the Interstate Commerce Commission regulations, I take it? A. Fairly so.

Q. And you know, do you not, that in the Interstate Commerce Commission regulations mixed acids are one of the kinds covered by the regulations? A. I know there are sections covering the question of mixed acids.

Q. You know, do you not, that there are sections covering nitric acid? A. I do.

Q. And that there are sections covering sulphuric acid? A. I do.

Q. In other words, there are specifications and regulations specified for each of those three groups, are there not? A. I believe so.

Q. Well, is there any doubt in your mind about that? A. No.

Q. And so-called mixed acid is commonly used for nitrating purposes, isn't it? A. I think that is the commonest use of it.

Q. And that is the most common designation of mixed acid, nitrating acid? A. The two may be synonymous in cases, but they are not always.

Gen. Appr. McClelland. That doesn't answer the question.

Last question repeated by the reporter.

A. Well, I wouldn't say which was the most common.

By Gen Appr. McClelland:

Q. Well, are they used interchangeably? A. A nitrating acid is always a mixed acid.

Q. Can't you answer my question? A. Not entirely; not absolutely interchangeable, in answer to your question.

By Mr. Lawrence:

Q. The mixed acid referred to in the Interstate Commerce Commission regulations are mixed nitric and sulphuric acids, aren't they? A. I don't recall the language.

Q. Will you please look at article 1858 of the regulations and refresh your mind? A. 58?

Q. 1858. (Witness looks at Exhibit 2.) A. What was the question?

Last question repeated by the reporter.

A. That is true.

Q. Are you sufficient of a chemist to know the chemical formula for nitric acid? A. I am.

Q. What is it? A. HNO_3.

Q. What is the chemical formula for sulphuric acid? A. H_2SO_4.

Q. What is the chemical formula for the commodity covered by the schedule, Exhibit 1; that is, the shipments here in question? A. I don't think that anyone would attempt to write a chemical formula for it as it is, as there are more than one substance present.

Q. How are they combined? A. Well, there is a—my—so far as my knowledge or understanding extends they are simply there as a mixture, although I believe there are some grounds for believing that some reactions may take place, but I can't testify on that point at all.

Q. You have no doubt it is a mechanical mixture, have you? A. That is my understanding of the condition.

Q. But as to whether there may be a chemical reunion you are not prepared to say? A. I am not.

Q. Well, it was a mechanical mixture of what? A. I can say there was—to what acid are you referring?

Q. I am referring to the thing you and I have been talking about for the last ten minutes—this mixture covered by these importations. A. In this importations there was a mixture of nitric acid, sulphuric acid, and water.

Q. So that it was a mixture of H_2SO_4, plus HNO_3, plus H_2O, wasn't it? A. That is correct.

Q. Now, are you familiar with the general uses of nitric acid not in association with other acids; that is, nitric acid alone?—A. No; I am not.

Q. Do you know that nitric acid does subserve many uses by itself? A. I presume that it has a number of uses, but I do not believe that there is any large tonnage, any large quantity of the nitric acid production in this country, for example, used by itself.

Q. Well, I suppose you have read more or less chemistry on the subject of nitric and sulphuric acids? A. No, I haven't devoted particular attention to it.

Q. You have not, but is there any doubt in your mind that nitric acid is used as a reagent in many industries, used by itself? A. My knowledge on it simply leads me to the belief that its quantitative use in that form is small, but I have no knowledge as to the number of uses or the detailed applications.

Q. Do you know if suphuric acid is used by itself for any commercial purposes? A. I think it is.

Q. What are some of its common uses? A. Well, there is a large quantity used in the fertilizing industry, and of course it is used by itself in the decomposition of nitrate of soda to make nitric acid, and it is also used by itself in the refining of oils. It is one of the most common chemicals in use in all industries; you can hardly find an industry that doesn't use it.

Q. It is used in the iron industry? A. That is correct.

Q. For pooling purposes? A. For pooling purposes, yes, sir.

Q. It is generally known that nitric acid is largely used for making chemicals which in turn contain nitric acid, is it not? A. In turn contain nitric acid?

Q. Nitric acid, I say, is largely used for making chemicals of which nitric acid forms a part? A. I am not familiar with that.

Q. You don't know that. Now, having in mind this mixture covered by the protests and the schedule, Exhibit 1, could you use that mixture for the purposes to which sulphuric acid is commonly employed? A. I should say you could not use it for the purposes for which sulphuric acid is commonly employed without nitric acid.

Q. Could you use this mixture practically for purposes to which nitric acid alone is commonly put? A. I should think not.

Q. Why not? A. I would presume that if the use, if a particular use requires nitric acid by itself that the sulphuric acid present might either be a detriment or an obstruction.

Q. It would interfere with the proper chemical reactions, wouldn't it? A. I can't answer that without a knowledge of the reactions that you speak of, but it would appear so. There are many reactions in which nitric acid plays a part, in fact most of the nitrating operations which are part of the explosive industry, and in those the presence of sulphuric plays a part and there, within certain limits, the addition of a little more or a little less sulphuric might not interfere with the reaction.

Q. It would follow then from what you have said that this mixture can not be used for either purposes to which sulphuric or nitric acid alone are put? A. It certainly does, if it is properly used alone.

Q. If what is properly used alone? A. If either the nitric or the sulphuric is properly used alone in these purposes you speak of, then obviously a mixture with something else in it ought not to be used and it will not give the same or proper results.

Q. That is, this mixture would not give you the result which you would expect to obtain by the use of either sulphuric or nitric acids

alone? A. I wouldn't expect it to do the same as either of them alone.

Q. Referring to the schedule, the schedule marked Exhibit 1, you stated that the percentages of sulphuric acid and nitric acid as expressed by the figures 20.16 and 72.28, respectively, were percentages by weight, did you not? A. I did.

Q. Is that different from saying percentages by volume? A. Yes, it is, because the specific gravity of the sulphuric which enters into the mixture and the specific gravity of the nitric acid wouldn't be the same.

Q. Have you estimated what would be the respective percentages by volume? A. I have not.

Q. Do you know whether it would be higher or lower, whether the percentages would be higher or lower than those stated? A. I do not.

Q. Do you have anything to do with the billing or shipping of this commodity? A. I personally have no connection with the detail of that work.

Q. Have you been to the plant at Drummondville where that mixture is prepared? A. I have.

Q. Will you state somewhat in detail just how the mixture is arrived at? A. Instructions were originally issued from my office as to the percentage of the composition which was to be aimed at by the Drummondville plant in making up these shipments. This composition was arrived at by my technical assistants as the composition which, in their judgment, would serve the purpose of making the mixture safe for transportation in tank cars. The plant was instructed that they would not have to obtain exactly the composition specified in the instructions that left my office because the knowledge on the subject does not give an exact percentage of sulphuric that is required for the protection of the cars, and there is a reasonable latitude that can be allowed. The plant, after receiving these instructions, did put oleum into a so-called mixing tank——

Q. Oleum, I understood you to say, was sulphuric acid which had been treated in some way? A. Well, it is manufacteured in such a way that it has a strength equivalent to 104½ per cent H_2SO_4.

Q. So that you have to deliberately treat sulphuric acid before you are ready to make a composition with nitric acid, is that right? A. No, that is not right; oleum is manufactured as such and was purchased by us as such.

Q. Well now, instead of combining the oleum with the nitric why don't you combine the sulphuric acid with the nitric? A. What do you mean by the sulphuric?

Q. The sulphuric acid from which you have made the oleum? A. We did not make the oleum, and in the manufacture of oleum it is manufactured direct to that strength by a certain kind of a plant that is capable of doing it.

Q. So that it never was a sulphuric acid? A. Of a lower strength?

Q. Of a lower strength?. A. No, it was sulphur, originally, and

it was burned to SO_2, oxidized to SO_3 and with the addition of a molecule of water was brought to H_2SO_4, and then in a plant which makes oleum an additional amount of SO_3 gas is put into a certain quantity of 100 per cent H_2SO_4 so as to produce this extra strength, so to speak.

Q. It still contains that strength in the importation, does it not? A. In the importation it has lost its characteristic as oleum entirely.

Q. By what reason? A. By the reason that the anhydrous SO_3 gas which was dissolved in the oleum which was present there has combined with some of the water that was with the nitric acid and become sulphuric acid.

Q. I see, so to that extent it has been a chemical disintegration, hasn't it? A. There has been a chemical change to that extent.

Q. Very well, now you combine the oleum with the nitric acid at Drummondville? A. That is correct.

Q. You had reached the point where you were discussing oleum, and I believe you stated you put that into some large vat? A. Yes.

Q. Proceed from there, please. A. After the oleum is placed in the mixing tank which is operated with agitation and cooling, the product from the nitric plant is run into that tank and a mixture continuously made as it runs in, and the amount of oleum put into the tank in the beginning and the current product of the nitric plant were arranged to be such that a final acid composition of the average shown by these importations was obtained.

Q. What is the specific gravity of the nitric acid at the time it combines with the sulphuric? A. I may be able—the nitric acid produced by the nitric plant varies in strength and specific gravity.

Q. Yes. A. As there is a wide difference between the product obtained at the beginning of a run and the end of a run. I may say, however, that the average product of the ordinary nitric plant will be between 85 and 90 per cent nitric, and the balance water, and that would be between the specific gravities of roughly 1.46 and 1.48, some decimal, I would have to calculate that.

Q. Then the specific gravity, would it ordinarily remain the same from the time it was introduced until it reached your plant at Emporium? A. The specific gravity of what?

Q. The nitric. A. Well, the specific gravity of the nitric acid introduced into this mixing plant loses its identity due to the oleum being added, and whatever the specific gravity of the resulting mixture may be at that time it will remain the same during shipment, within a trifling limitation and depending on the tank car. To be technical about it you could conceive of some moisture coming through the valves of the tank car and adding water to the mixture.

Q. In what way does the nitric acid lose its identity when it comes in contact with the oleum? A. The nitric acid, when it enters this mixing tank is a mixture of nitric and water.

Q. Yes. A. And after it gets into the tank and meets the oleum there it is impossible to say that that water is still associated with

the nitric acid; as a matter of fact it probably is more closely associated with the sulphuric acid; at any rate the sulphuric has the property of changing the characteristics of that nitric acid so that were the sulphuric not there it would react strongly with iron and in the presence of sulphuric it does not have that action upon iron so strongly.

Q. So if it were commercially practicable for your plant at Emporium to separate the sulphuric from the nitric you would find a different strength and specific gravity in the nitric acid which you recovered from that which combined with the oleum in Drummondville? A. Well, that would all depend on your apparatus for making that operation. You could separate those two, I believe, in such a way that the nitric acid produced would be of the same specific gravity and the same composition of nitric and water that it was originally in before being mixed with the oleum.

Q. You haven't tried that? A. We do separate nitric and sulphuric acids after they have been mixed as a commercial proposition.

Q. You didn't do that in these cases, did you? A. No; we did not with this particular acid.

Q. And when you stated that this was, or rather you did state, I believe that this mixture of 20 per cent sulphuric with 70 per cent nitric was done solely to conform with the requirements of the Interstate Commerce Commission, is that right? A. The fundamental purpose was to ship nitric, incidentally to do it we had to conform with the existing railway regulations. We didn't ship acid so as to have something that would come under the Interstate Commerce Commission regulations, we shipped acid because we had some nitric acid we wanted down here to make munitions of, and in doing that we succeeded in meeting the requirements of the Interstate Commerce Commission permitting that.

Q. Didn't you say the purpose of the mixture at the proportions stated in Exhibit 1 was solely for the purpose of conforming with the Interstate Commerce Commission regulations? A. I may have stated that, but that does not go back to the fundamental purpose. Our purpose was to ship nitric acid to this country, to Emporium, and incidentally in order to do that we had to make this mixture to meet the requirements of the Interstate Commerce Commission.

Q. Well, you know, do you not, that nitric acid is susceptible to transportation in glass carboys? A. Within certain limitations it is.

Q. And it is not necessary to add sulphuric acid to it, is it? A. If you can meet the limitations it is not necessary to have sulphuric acid.

Q. You know that the Interstate Commerce Commission regulations do provide for the shipment of nitric acid alone in glass carboys, don't they? A. I do.

Q. And the same is true of sulphuric acid, isn't it? A. It is.

Q. Well, how long has it been that you have had to conform to

the interstate Commerce Commission regulations in shipments of this sort? A. I don't understand your question.

Q. How long have you made it a point to mix nitric and sulphuric acids for the purpose of meeting the requirements of the Interstate Commerce Commission regulations? A. Just so long as we have wanted to ship strong nitric acid in quantity.

Q. How long has that been? A. Ever since the inception of the military business at least, perhaps further back than that of this company.

Q. Well, how far back can you go? A. I can go back to 1916, to my personal knowledge; and I know that in 1916 when the Aetna Company required strong nitric acid for use in the manufacture of munitions it was making, it always purchased that strong nitric acid mixed with sulphuric acid with a minimum of sulphuric and had it transported in tank cars because it was the only way of doing it.

Q. Suppose you wanted to transport nitric acid from Bethlehem to Emporium, Pennsylvania, would you be under any necessity of mixing 20 per cent sulphuric acid with that nitric acid to transport it that distance? A. What kind of nitric acid are you speaking of, what strength?

Q. 1.4904. A. You couldn't ship that except by adding sulphuric acid to it, there is no legal way of shipping it otherwise.

Q. Regardless of the legal ways. A. Well, as a practical matter?

Q. Yes. A. Well, as a practical matter if it were a trifling quantity and there were no legal obstacles I would ship it in glass.

Q. Suppose its specific gravity were 1.49, could you then transport it in tank cars, nitric acid, without sulphuric acid being added? A. You could not.

Q. At what specific gravity could you transport it in tank cars without adding sulphuric? A. There is no specific gravity at which you could transport it without sulphuric except as a purely theoretical consideration, at a specific gravity that corresponds to 100 per cent nitric might be shipped, but it wouldn't be a practical matter because just the moisture from the air would ruin your car before you got it shipped, unless it was hermetically sealed.

Q. Would it be—suppose you wanted to bring nitric acid from Bethlehem to Emporium of a specific gravity of 1.49, would it be necessary to add 20 per cent sulphuric acid to it? A. Not if you can get sufficient containers of the type that are legal for the transportation of that strength of acid.

Q. What is there that would make it illegal to transport that from Bethlehem to Emporium, Pennsylvania? A. There is nothing illegal if you put it in the kind of containers that is specified for that particular kind of acid.

Q. Is there any prohibition against shipping that nitric acid in tank cars from Bethlehem to Emporium? A. As I recall the Interstate Commerce Commission regulations permitting the shipment of nitric acid they make no mention of shipping it in tank cars, but if so, I presume, as their regulations state the way in which it can be

done, the absence of any permission to do it is a legal restriction against it, and as a practical matter of course it can't be done.

Q. Well, these regulations wouldn't apply in that instance, in the instance of a shipment from Bethlehem to Emporium, Pennsylvania? A. The Interstate Commerce Commission regulations?

Q. Yes. A. They apply to all railway movements in the United States.

Q. I thought they applied only to interstate commerce, not intrastate commerce? A. No, they apply to all railway movements in the United States, and I think the same code has been adopted in Canada, so that in effect they apply in both countries, but primarily they were issued to apply to rail movements throughout the United States.

Q. What is the range of specific gravity of nitric acid? A. Why, I don't carry those things in my mind. I have a few notes here, which do not give the full range, however.

Q. What are those which you have: what is the lowest and what is the highest? A. In the notes which I have here the most diluted acid is 67.1 per cent that I have a note about, and the specific gravity of that is 1.4078.

Q. The specific gravity is what, sir? A. 1.4078.

Q. Yes; then there are other specific gravities between that and 1.4904? A. Yes; the percentage strength which corresponds to 1.49 is 89.38.

Q. Yes; now, suppose you wanted to import nitric acid of a specific gravity of 1.4078, would it be necessary to add 20 per cent sulphuric acid to that?. A. As a legal matter it would not be necessary.

Q. No; I mean for the protection of the tank car? A. If you wanted to put that in tank cars, it would be absolutely necessary to add sulphuric acid to it.

Q. To add sulphuric acid to it? A. Yes.

Q. I asked you if it would be necessary to add 20 per cent? A. The percentage of sulphuric acid which should be added to a weak nitric of that sort should be more than 20 per cent.

Q. Be more? A. As I am advised by my technical assistants.

Q. So that is it not true that in mixtures of nitric and sulphuric acid the percentage of sulphuric varies according to the strength of the nitric acid which is being combined with it? A. Are you speaking of mixed acids made up purely for the purpose of transportation, or covering the whole field of mixed acids?

Q. Mixed acids which the Interstate Commerce Commission regulations treat of. A. Well, the Interstate Commerce Commission regulations cover the whole field of mixed acids, and answering your question on that basis, I would say, the sulphuric acid was not regulated exclusively by the amount, by the strength of the nitric acid entering into the mixture.

Q. Do you mean by that, regardless of the strength of the nitric acid, in order to conform with the regulations of the Interstate Com-

merce Commission you would have to add 20 per cent sulphuric? A. I do not mean that, I didn't say so.

Q. Just what do you mean? A. I mean that if you are making up a mixture of sulphuric and nitric acid purely for the purpose of making the nitric acid safe to transport in tank cars, the amount of sulphuric introduced should be varying in proportion, roughly in proportion to the amount of water which is introduced into the mixture with the nitric. The matter is somewhat indefinite and opinions will vary as to the minimum amount of sulphuric which can be used for a given quantity of water present.

Q. So that the amount of sulphuric that necessarily would prevent corrosion in a tank car depends upon the degree of concentration of the nitric acid, does it not? A. That is correct.

Q. And you would not say that 20 per cent of sulphuric acid was necessary to arrest the corrosion in a tank car in all shipments of nitric acid? A. I would not.

Q. How low a percentage of sulphuric acid in your opinion would be safe to prevent corrosion in a tank car in any strength of nitric that you may suggest? A. Well, I don't want to speculate on the matter because it is an experimental proposition that can only be definitely proven by either actual practice over a considerable period or research experiments extending over a considerable period because no one would want to ship a mixture which would destroy a tank car in six months, so that the experiments are necessarily limited. Now, as a matter of information, we made an investigation of this subject at the time that this movement of acid was undertaken, and the results of our own experiences and the information we got from the shippers of acid and the users of acid decided us on this approximate composition, and it has proven in practice that the deterioration of the tank cars has not been excessive. In the study that was made of it some of the people advised a higher percentage of sulphuric that we used——

Q. Higher than what? A. Higher than 20 per cent for this particular mixture. In fact, I don't think that anybody owning a line of tank cars would knowingly lease their cars to be used for this particular mixture; they would probably be suspicious that the deterioration might be excessive. However, we were shipping them in our own cars and wanted to use the minimum amount of sulphuric so we adopted this particular composition.

Q. Does the specific gravity of nitric acid diminish in proportion to the amount of water it contains? A. Yes, the larger the amount of water it contains the lower the specific gravity. In other words, the anhydrous nitric acid is heavier than water, and as you add water the specific gravity of the resultant nitric acid is lowered.

Q. Then does it follow the lower the specific gravity of the nitric acid the greater its corrosive force, or is it the reverse of that? A. It wouldn't be an exactly proportional relationship because these chemical combinations, that is what we are dealing with, the chemical combination between nitric acid and iron, do not proceed usually upon

exact proportions. In the study of this matter it has been observed that weak nitric acid has a greater corrosive effect upon iron than strong nitric acid, but whether it is in exact proportion to the amount of water—but I doubt very much whether it is.

Q. But generally speaking the weaker the nitric acid the greater the percentage of sulphuric acid required to prevent corrosion? A. That is true within reasonable limits.

Q. So far as the importation in carboys is concerned, glass or earthenware, which is the safer for transportation by that method, the nitric acid of low specific gravity or high? A. Well, the element to be considered in carboy transportation is not any corrosion of the container, because there is no action between the nitric acid and the glass, but it is the contingency of the container breaking. Well, now, a weak nitric acid is less likely to set fire to the wooden parts of the car and anything else that may be near in the event of a breakage of a carboy than the stronger acid.

Q. So that the relative low specific gravity nitric acid would be safer for transportation in carboys? A. Yes; that is evidenced by the regulations of the Interstate Commerce Commission.

Q. In other words, they permit the importation of nitric acid all gravity in certain size glass carboys, don't they?

Mr. Pratt. Glass bottles, not carboys, seven-pound glass bottles.

A. Yes, all gravities in small seven-pound bottles packed in certain ways, but that is apparently because they consider that seven-pound bottles so packed are not likely to break, so they allow all strengths to be shipped that way.

Q. Let me ask you further, What was the specific gravity in these importations? A. The specific gravity of the nitric acid entering into the mixture was 1.490. I do not know the specific gravity of the complete mixture.

Gen. Appr. McClelland. How would that be affected, up or down by the combination? A. Well, I think that the oleum that was added would be heavier than the acid, and it would be increased. I am quite positive of that.

Q. Although you stated that the sulphuric was added to the—oleum was added to enable you to conform with the Interstate Commerce Commission regulations, you did not after importation separate the sulphuric acid from the nitric, did you? A. We did not.

Q. As a matter of fact, you added more sulphuric, didn't you? A. That is true.

Q. So that to a certain extent there was a commercial advantage in having the sulphuric in there? A. There was none.

Q. Why not? A. Because the sulphuric acid that was added in

Canada for the purpose of making it safe for transportation was purchased at a price equal to or in excess of the price at which it could be purchased in the United States, and there was additional freight involved.

Q. Yes, but having gotten that commodity at your plant wasn't it cheaper for you to add such a percentage of sulphuric acid as was necessary to get your final mixture than to take a straight nitric acid and add all the sulphuric necessary to make it adaptable for your purposes? A. There was less expense for sulphuric acid at the plant which received this mixture, but the total expense to the company in getting the final mixture it needed to use was greater due to having added part in Canada and paid the freight on that into the United States than would have been the case had we been able to bring strong nitric acid in and add all the sulphuric at the destination.

Q. What I am asking is, suppose you had at your plant 1,000 gallons of nitric acid and 1,000 gallons of this mixture, wouldn't it be more to your advantage, if you were preparing to do some nitrating work, to add we will say 25 per cent sulphuric to the mixture than to prepare your straight nitric acid? A. No, quite the contrary.

Q. Why? A. Because 1,000 gallons of the nitric acid would be a very much more valuable block of material than the thousand gallons of mixed acids, because the thousand gallons of mixed acid will contain approximately 20 per cent sulphuric, which in percentage of value would be only three or five per cent within those limits, depending on market fluctuations.

Q. But to prepare this nitric acid you have got to add say 40 per cent sulphuric? A. Whatever it may be that you add, you would—commercially it would be better to have 1,000 gallons of straight nitric acid than 1,000 gallons of mixed acid because you could convert that 1,000 gallons of nitric acid into the desired nitrating acid and have a greater quantity than you would of the mixed acid after it had been converted into the desired nitrating acid, so there will be no commercial advantage in having 1,000 gallons of mixed acid rather than 1,000 gallons of the straight nitric acid.

Q. Suppose we lower the figure of the nitric; suppose you had 800 gallons of nitric acid and 1,000 gallons of the mixture, wouldn't it be simpler to add 20 per cent more to the mixture than to add 40 per cent to the straight nitric? A. You mean mechanically simpler?

Q. Yes. A. The mechanics of the thing are the same in either case, there is no mechanical advantage in that.

Q. In one case wouldn't you have your other mixture partly complete? A. Yes, you would, but that is no mechanical advantage.

Q. Then as you put it there is no advantage, you would rather have the nitric acid straight than mixed? A. I certainly would rather have the nitric straight than mixed if I could get it in that way.

Q. Couldn't you by importing it in glass carboys? A. Not this particular mixture.

Q. I didn't ask you about this particular mixture, I said couldn't you get your nitric acid straight by importing it in glass carboys? A. We couldn't get the nitric acid of the strength which was required for the operations on which this material was used in carboys.

Q. Why? A. Because of the limitations in strength and limits in carboys.

Q. Can't you import it in carboys at the strength permitted and then bring it to the strength you desire for your other purposes? A. Not commercially.

Q. Why not? A. Because the expense involved would be too great, it isn't a commercially feasible thing to do.

Q. But it is a matter of economy that compels you to bring it in in a mixed condition? A. As compared with what?

Q. As compared to bringing it in in carboys? A. The question of economy wouldn't determine whether——

Gen. Appr. McClelland. That isn't what he asked you, Mr. Witness, he wants to know whether it is commercially more economical to mix it than to bring it in in carboys, that is your question?

Mr. Lawrence. It is more economical to bring it in as they do than to bring it in in carboys?

Gen. Appr. McClelland. Yes.

Mr. Lawrence. And to bring it to the required strength.

A. It is more economical to bring it in in tank cars.

Gen. Appr. McClelland. That answers the question.

Q. When you spoke of dry nitric acid on your direct examination what did you mean? A. I simply meant pure HNO_3.

Q. Yes, what is the specific gravity of that? A. Well, it is something more than 1.50, but I haven't got it here; I have got a strength of 95 per cent here.

Q. You say that would not corrode iron at that strength? A. That is my information, but it is not a strength that exists commercially at all.

Q. Well, why in making this mixture in Canada do they use oleum instead of straight sulphuric acid? A. Because by using oleum we could use a less amount of sulphuric acid in the final mixture.

Q. That is, here in Emporium? A. No, in Canada. The oleum has the property of absorbing, so to speak, not using technical terms but layman's terms, of absorbing some of the water with the nitric acid because the oleum has dissolved in it this dry gas; therefore, if you set out to get a definite percentage of sulphuric acid and a definite percentage of water in your final composition, you can accomplish that with oleum better than with any weaker acid because with a weaker acid you would be using some water which you are not adding to the nitric when you use oleum.

By Gen. Appr. McClelland:

Q. Well, are oleum and sulphuric acid two distinct commodities? A. Oleum is a form of sulphuric acid. The term sulphuric acid is a generic term.

Q. I want to know if we have in this mixture three distinct commodities? A. No, sir.

Q. Nitric acid, oleum, and sulphuric acid? A. No, sir.

Q. Or whether we have only two? A. We have only the two, nitric acid and sulphuric acid, and water.

Q. Then you recognize the oleum and the sulphuric acid as being the same thing because I notice you speak of sulphuric acid and oleum and nitric acid. (No audible answer.)

By Gen. Appr. Brown:

Q. When you get it into the tank car you haven't any oleum? A. That is correct.

Q. Haven't anything but sulphuric acid? A. Sulphuric acid, nitric acid, and water.

By Gen. Appr. McClelland:

Q. How do you dispose of the oleum? A. It is transformed from oleum into sulphuric acid simply by combining with some of the water which is introduced with the nitric.

By Mr. Lawrence:

Q. Is oleum obtained from the same source that sulphuric acid is? A. It is.

Q. What is the chemical formula for oleum? A. The chemical formula for oleum would be 80 per cent H_2SO_4 and 20 per cent SO_3.

Q. While sulphuric acid would be H_2SO_4? A. 100 per cent sulphuric acid would be H_2SO_4, but the term sulphuric acid is used in the trade to denote weaker mixtures than 100 per cent.

Q. Then, when you arrive at Emporium with this product do you add sulphuric acid or do you add oleum? A. Chiefly oleum.

Q. Chiefly oleum, and that brings it to the required strength for nitrating purposes, is that right? A. That is true.

Q. Now, you are familiar with the Baumé test, are you? A. Yes.

Q. What does that indicate or what does that signify? A. Well, it is directly related to specific gravity and for any specific gravity, well, you can express in terms of degrees Baumé the same characteristics of the substance you are talking about.

Q. What would be the approximate Baumé test of this mixture? A. The mixture that was shipped?

Q. Yes. A. It would be approximately 47.7 Baumé.

Q. And did you ascertain—— A. I haven't calculated that, I am interpolating it from the data I have at hand.

Q. Have you estimated the Baumé test for the respective acids, the

nitric and sulphuric, that I took was the test for the mixture? A. As I understood your question it applied to the nitric acid which went into the mixture and my answer should be so taken.

Q. Oh, you gave an answer as applied to the nitric at the time it was combined? A. Just prior to the time it was combined.

Q. You didn't mean to give that as an answer for the Baumé test of the mixture at the time of its importation? A. No; I have no notes on that.

Q. Have you a Baumé test for the sulphuric or oleum at the time of the combination? A. I have not.

Q. And you say the test, Baumé test for the nitric was what? A. About 47.7.

Q. And that means what, in plain terms? A. Well, it means directly a certain specific gravity.

Q. You don't mean to say that was the specific gravity of that particular nitric acid? A. No; but I mean that there are arbitrary scales for measuring specific gravity. Now, the scale that is our common, and so to speak our official one, is its relation to the weight of water. If we say the specific gravity of that nitric acid was 1.49 we mean that a kilo of it weighed 1.49 times as much as a kilo of water under certain standard atmospheric and temperature conditions. Now, there is another scale which is more convenient in many cases, which is the Baumé scale——

Q. Yes. A. And it expresses the same phenomena in another way.

Q. And is that test made also at a certain degree of temperature, that is, the Baumé test? A. It either should be made at a certain standard temperature or the results converted to standard conditions.

Q. What was the temperature at which that Baumé test was made, 47.7? A. Are you speaking of some particular test?

Q. This one you have just been testifying about, you say the nitric acid in this mixture showed a Baumé test of what, of 1.4904? A. No; not a Baumé test, I say a Baumé test of approximately 47.7.

Q. At what temperature did you get that result? A. My test was based on the analysis composition given in the Exhibit 1, and didn't refer to a specific test that was made.

Q. I see; so that you do not know at what temperature that Baumé test would show? A. I know that an acid of the composition given would at 60 degrees Fahrenheit have a specific gravity of 1.4904, and I know that that specific gravity corresponds with the Baumé reading of— of approximately 47.7.

Q. Then you are assuming that this Baumé test would result at a temperature of 60 degrees? A. No; the Baumé test in these equivalents that I have in my notes is made equivalent to the specific gravity at 60 degrees Fahrenheit, so that whatever the standard temperature is for Baumé tests that has been taken into account in this table of equivalents that I have before me.

Q. Suppose, Mr. Wellenberg, you wanted to import less than a carload lot, how would you get it in, of nitric acid? A. I would put less than a carload in a tank car and ship it in, unless the quan-

tity were so small that it would be a practical matter to ship it in bottles.

Q. The Interstate Commerce Commission regulations provide for a method of shipping it in less than carload lots, don't they? A. They do.

Mr. Lawrence. That is all, Mr. Wollenberg.

By Mr. Pratt:

Q. Mr. Wollenberg, would it have been possible to get a sufficient number of carboys to use in shipping this quantity of nitric acid into the United States?

Mr. Lawrence. That is objected to on the ground that it calls for a conclusion by the witness.

Mr. Pratt. If your honors please, that is a very material fact to show that we couldn't get the carboys; they weren't to be had.

Mr. Lawrence. How can that affect the question of the dutiability of a mixture?

Mr. Pratt. You are arguing upon the presumption that we might have obtained, brought this in in glass carboys. I want to show that it couldn't be done.

Gen. Appr. McClelland. I think if it was shown that this witness was sufficiently advised as to the condition of the market of supply of carboys it might be competent for him to answer; it doesn't appear he knows anything about it.

Q. Do you know anything about the possibility of obtaining glass carboys during the fall of 1917 for shipment. A. I do.

Q. Would it have been possible to have obtained a sufficient number of glass carboys to use in importing this acid that you did import?

Mr. Lawrence. That is objected to on the ground that the sources of his information are not described.

Gen. Appr. McClelland. Objection overruled.

Mr. Lawrence. Exception.

A. No.

Q. There weren't a sufficient number in existence, were there?

Mr. Lawrence. That is objected to because the witness is not qualified to answer.

Q. Being familiar with the trade, you are in the business of making acids and transporting acids, are you not, Mr. Wollenberg? A. I am.

Q. And that requires you to keep in touch with the conditions in the trade? A. It does.

Q. And you did so keep in touch during the time of these ship-

ments? A. I did through a purchasing assistant, who is directly responsible to me.

Q. Have you personally looked over and investigated and concluded whether or not the information given you by this assistant was accurate, and so on? A. Certainly.

Q. Now, as a result of such investigation did you acquire a certain knowledge as to the conditions and the amount of carboys in this country? A. I didn't get any detailed figures as to the total number of carboys in service in the country, but I did get information on the available carboys, either that were made up and might be purchased or might be ordered to be made.

Q. What was the result of that investigation?

Mr. Lawrence. That is objected to on the ground that it is hearsay, incompetent.

Gen. Appr. McClelland. If it appears the witness has made an effort and couldn't get them he may state it.

Mr. Lawrence. Exception.

A. It was that we could not possibly get carboys for that movement of acid.

By Gen. Appr. McClelland:

Q. Well, did you ever try to get carboys and fail? A. For this particular movement of acid?

Q. For any purpose? A. Yes; indeed we did; we made—we were in the market for carboys time and again and unable to get them.

Q. Within the period covered by these importations? A. Yes, sir.

Gen. Appr. McClelland. We will now take a recess until two o'clock.

AFTERNOON SESSION.

By Mr. Pratt:

Q. Water is a chemical, is it not? A. It is.

Q. Nitric acid commercially contains water to a greater or less amount, does it not? A. It always does.

Q. Anhydrous nitric acid—that is, nitric acid containing no water—is not a commercial thing? A. It is not only not a commercial product but it is almost an unknown product, although I suppose it could be prepared.

Q. The same thing is true of sulphuric acid, is it not; sulphuric acid always contains some water? A. No; sulphuric acid soretimes is 100 per cent, although that isn't the common form for it.

Q. Well, generally then speaking—— A. Generally it does contain water, with the exception of oleum, which is a mixture of sulphuric acid and SO_3 gas.

Q. How is oleum described, what is it shipped as, so-called oleum or sulphuric acid? A. It is shipped as sulphuric acid. The regulations for shipment do not, to my knowledge, mention oleum, they mention only sulphuric acid, and oleum is therefore shipped as sulphuric acid.

Q. It is a concentrated form of sulphuric acid? A. Yes, sir.

Q. And considered as sulphuric acid? A. Well—yes, sir.

Q. 104½ per cent sulphuric acid? A. Yes.

Q. Just as, for the sake of argument, ammonia has different strengths. Ammonia is a solution of gas in water, is it not? A. Yes.

Q. And it will vary as to degrees of water? A. As to strength.

Q. And it is comparable in that respect to nitric acid and sulphuric acid? A. That is correct.

Q. Now, in 1917, the fall of 1917, when these shipments were being made, you have said you sent instructions to add a sufficient amount of oleum to bring the resultant mixture to contain 20 per cent sulphuric. Was that the general understanding at that time as to the minimum quantity of sulphuric which would have to be added to nitric acid in order to safely transport the nitric acid in tank cars? A. It was; and our decision in that respect was based on all that we knew or could find out about the subject.

Q. Then you added simply as little sulphuric as possible to the nitric to transport it? A. We did.

Q. And what you wanted to transport was nitric? A. That is correct.

Q. So it is safe to say, or, rather, fair to say, that the sulphuric was only added as a container for the nitric?

Mr. Lawrence. I object to the continued leading examination of counsel. I think the witness is fully competent to testify, and I prefer that he state the answers rather than counsel.

Gen. Appr. McClelland. It would be a little better, or more gratifying, to let the witness say it rather than you.

Mr. Pratt. I didn't think that was a leading question. If your honors think so, I will change the form.

Mr. Lawrence. I may have been mistaken about it, but it strikes me as leading.

Last question repeated by the reporter.

Mr. Pratt. It doesn't seem to me to be leading.

Mr. Lawrence. I object to the answer if the question is to be allowed, on the ground that it calls for a conclusion.

Gen. Appr. McClelland. The Board seems to think it ought to be answered.

Mr. Lawrence. Exception.

A. It is absolutely proper to say that we added the sulphuric as a container or to make possible the transportation of the nitric acid in commercial containers; that is, tank cars.

Q. And for no other purpose? A. And for no other purpose.

Q. Now, you said it was possible, I think, to have separated the nitric and sulphuric acids after their arrival in this country; that is, to separate from this mixture the two acids, nitric and sulphuric; was that possible commercially in the manufacture of your explosives? A. The expenses and losses in separating the nitric and sulphuric acids in the mixture would be prohibitive, and I know of no—and certainly under the contract that we were operating on for the Government we couldn't have considered doing such a thing; it would be commercially impracticable.

Q. Of course, it is chemically possible? A. It is chemically possible; yes.

Q. That is what you meant when you said it was possible to separate the two acids, nitric and sulphuric? A. That is what I meant.

Q. Now, is it possible for you to use in the manufacture of explosives in your plant nitric acid which has as low a specific gravity as 1.43, commercially? A. We couldn't use them.

Q. I don't mean chemically—chemically you can do anything—but I mean commercially. A. We couldn't use a nitric acid having a specific gravity as low as 1.43 in our processes unless we first changed it in strength, which would be commercially an impracticable thing.

By Gen. Appr. McClelland:

Q. Well, it would be nitric acid, just the same? A. It would be nitric acid and water, only it would have a larger quantity of water in it than would make it possible to use in our processes.

Q. But wouldn't it commercially be nitric acid, notwithstanding the presence of water? A. The term is commonly used that way—nitric acid.

By Mr. Pratt:

Q. Let me ask you, what is the commercial understanding of the word nitric acid?

Mr. Lawrence. That is objected to on the ground that the witness's experience does not relate back to the time the law was framed.

Gen. Appr. McClelland. I don't quite get that.

Last question and objection repeated by the reporter.

Gen. Appr. McClelland. Objection sustained.

Q. Of course, nitric acid is a well-known term, is it not, Mr. Wollenberg? A. It is a very well-known term.

Q. It is a term that has been known in chemistry ever since chemistry was known as a science, is it not?

Gen. Appr. McClelland. Suppose you confine it to the period within which he knew anything about chemistry.

A. It is one of the earliest and best known reagents and it has been a well-known commodity during my life time, anyway.

Q. And it has always had the same meaning, has it not? A. So far as I know.

Q. And what is the meaning that it has always had? A. It has always been applied to a mixture of nitric acid and water in varying proportions.

Q. Varying between what percentages of water, if you know? A. Why, varying from a very great dilution, that is with a very high per cent of water and small percentage of nitric up to perhaps 95 per cent nitric and five of water, which would be very strong nitric acid and about as strong as ever would be encountered anywhere.

By Gen. Appr. Brown:

Q. What proportion of the chemically pure variety of nitric acid do you use in your laboratory, how much water do you use? A. Commonly the nitric acid used in the laboratory is 42 degrees Baumé, which has 67 per cent in it.

Q. That is all? A. That is the common laboratory reagent you get.

By Mr. Pratt:

Q. 67 per cent nitric? A. 67 per cent nitric. As to the laboratory where you were doing work on certain high explosives or work of that sort you might have some C. P. nitric acid, that means chemically pure, or of a strength as high as 90 per cent, but it is very unlikely you would have anything higher than that.

Q. Then the ordinary commercial nitric acid used in commerce usually has a strength of about 67 per cent nitric? A. That is correct, and as an evidence of that I would like to point to the fact that the Government in fixing the price of nitric acid fixes a price on this dilute acid which has about 67 per cent nitric in it, and then states that other strengths are to be priced according to the nitric contents. But in selecting the nitric acid to put a price on they selected the one that has 67 per cent nitric and 35 per cent water in it.

Q. And that is the produce which is usually shipped in glass carboys? A. I think that probably 99 per cent or more of the shipments in glass carboys are either that product or a somewhat weaker one.

Q. That is, containing less nitric? A. Less than 67 per cent.

Gen. Appr. McClelland. The Government does not use the mixture of nitric and sulphuric as a basis for fixing prices? A. Not as a basis for fixing prices.

Q. The Government fixes prices for sulphuric in the same way as nitric, on a certain percentage of sulphuric and water, does it not?

A. Not exactly, it fixes a definite price for oleum and another definite price for an acid that has approximately 92 per cent sulphuric in it, and a third price for an acid that has approximately 70 per cent sulphuric in it, and then it stipulates that any other strengths are to be based on their proportion to the lower strength upon which a price is set by the Government.

Q. So that with reference to the sulphuric instead of having one basic price there are three basic prices? A. There are three prices, in effect three basic prices covering different ranges of strength.

Q. Now, has the term mixed acid any well-known and definite commercial meaning?

Mr. Lawrence. That is objected to on the ground that any testimony of commercial meaning should relate back to the time of the passage of the law.

Mr. Pratt. There is this to be said, from what I know of the tariff act, it does not contain the word mixed acid anywhere.

Gen. Appr. McClelland. But you are asking him about a commercial definition. Of course, any definition that the witness may be familiar with only relates to 1916.

Mr. Pratt. It has got to be taken subject to his limitations of knowledge, but Mr. Lawrence's objection to the question is not a good one for the reason the word mixed acid does not appear in the tariff law.

Gen. Appr. McClelland. Then what is the purpose of the law?

Mr. Pratt. The argument appears to be on the part of the Government that because this is called a mixed acid in the regulations, because we invoice it as a mixed acid and so call it, that therefore it must be a chemical mixture and cannot be nitric acid.

Gen. Appr. McClelland. Is there anybody that calls it anything else?

Mr. Pratt. I don't know that there is.

Gen. Appr. McClelland. Is there any dispute that it is a mixed acid?

Mr. Pratt. I want to show what it is commercially.

Gen. Appr. McClelland. What is the fact?

Mr. Pratt. That is the fact I wish to bring out.

Gen. Appr. McClelland. There is no dispute that that is what it is.

Mr. Pratt. There is no dispute the product we brought in is a mixture of nitric and sulphuric acids, but to say the thing we brought in is commercially known as mixed acid is quite a different thing from admitting it was made up from nitric and sulphuric acids. In other words, mixed acid in the trade may mean a mixture in different proportions from what we brought in, that is what I want to know. Mixed acid, if it had any mean-

ing in the trade whatever, had a meaning that meant a greater percentage of sulphuric than the mixture we brought in.

Gen. Appr. McClelland. Objection overruled.

Mr. Lawrence. Exception.

Last question repeated by the reporter.

A. So far as I know it has no application to a specific composition of acids, and it would always be necessary in the trade to specify the composition of mixed acid which was under discussion or required or bought or sold.

By Gen. Appr. McClelland:

Q. There is no standard for mixed acid? A. There is no standard mixed acid.

Q. Every mixture may be different from any other mixture? A. Exactly. In any one particular trade they may always require the same mixture, and in that particular at least they might order some mixed acid from the man who had always supplied them, and he would know what they meant because they had always gotten a certain mixture, but as between two strangers the term mixed acid would only mean that it has sulphuric and nitric in it, and it would have to be more clearly defined. On the other hand, there are certain limitations of the composition which have been in practical use, in common use, so that the term does apply within certain reasonable mixtures.

By Mr. Pratt:

Q. What are those limitations to which the term does apply? A. I can't speak for all branches of the trade, but as far as my familiarity with the term is concerned it applies to mixtures of nitric and sulphuric of such proportions that the mixture could either be used as a so-called fortifying acid going into a process or as a nitrating acid going into a process, in either of which events it would have a composition in which the sulphuric would be not less than 45 per cent and varying up to perhaps 75, and the nitric and the water would be accordingly to fill out your 100 per cent.

By Gen. Appr. McClelland:

Q. You are giving us your own individual views? A. I am giving my understanding of the terms as I have never heard it used any other way.

Q. That isn't based on any uniform opinion that men handling this sort of mixture have conveyed to you, is it? A. It is in part because I have discussed this with a great many acid people since

this question was raised, and I believe that to be the whole trade attitude on the question.

Gen. Appr. McClelland. You can't establish commercial meaning in that way. However, let it stand for what it is worth.

Mr. Pratt. It is good for what it is worth.

By Gen. Appr. Sullivan:

Q. Supposing you were a manufacturer of nitric and sulphuric acid, and I sent you an order for 400 gallons of nitric acid, what would I get? A. I would call you right up on the telephone and I would ask you what strength nitric acid you wanted, and if you weren't sure what strength you wanted I would ask you what you were going to use it for, and then I would help you decide.

Q. When the law uses the word nitric acid hasn't that a definite meaning in the trade and commerce of the United States? If I would send you an order, as I say, send me 400 gallons of nitric acid of a strength of 90, as you would call it, whatever that may mean, what would I get? A. Well, if you asked me for nitric acid with a strength of 90 per cent I would have to reply to you that there was no way of shipping 90 per cent acid except in seven-pound bottles. If you would take it in seven-pound bottles I would ship it to you, if I could get the bottles. Now, if you asked me for 67 per cent nitric acid it would be an article, a common article of commerce, and I would ship it to you in glass carboys.

Q. Now, then, as I understand you, if I should send an order for that amount, 400 gallons 90, you say there is a nitric acid with that strength? A. Yes; that can be produced.

Q. Maybe that is too high; I should say 80 per cent; if I should send you an order for 400 gallons of nitric acid at 80 per cent strength, you would send that to me in a certain vehicle, then, wouldn't you? A. I would, in a vehicle permitted by law.

Q. And one of the vehicles you would send would not only be the car, but there would be the mixture connected therewith of another fluid to lessen its corrosive effect; is that right? A. That is what I would do, exactly, if you were a manufacturer of some product in which you later, or in which you could, so to speak, bear to have some sulphuric with your nitric, either because later you were going to put some in or it wouldn't do any harm.

By Gen. Appr. McClelland:

Q. That would be executing an order quite independent of the form of order received. A. I will answer that question by saying that all these acid orders contain the specifications with regard to containers. We don't order nitric acid without specifying in what way it shall be shipped.

Q. You would never send a man a mixture unless he asked for it? A. Not unless he agreed to take it.

Gen. Appr. Sullivan. I want counsel to get this, because it is the question involved here. The statute says that nitric acid is free. Now, if there is no such thing as nitric acid that can be transported, what did Congress mean when it said that nitric acid was free, what kind of acid did it have in mind? That is the question in this case.

Mr. Pratt. That is just the question exactly.

Gen. Appr. Sullivan. What I want to know is whether or not the vehicle to transport that nitric acid may not also include, as I gather is the contention, something that will destroy its corrosive character, namely, sulphuric acid, whether you consider that the vehicle.

The Witness. That is exactly what I consider it.

Gen. Appr. McClelland. Yes; but we have got to consider the conditions that prevailed at the time this law was enacted.

Mr. Pratt. I will bring that out later; this witness can't testify to that.

Gen. Appr. McClelland. Those conditions might show that in the quantities in which nitric acid was put up, purchased, and transported it was a practical thing to do it without a mixture.

Mr. Pratt. Oh, it is a practical thing to-day up to a certain extent, to a certain point. Let me just continue Judge Sullivan's line, though.

By Mr. Pratt:

Q. Suppose I sent you an order for 1,000 tons of nitric acid a month to be delivered over a period of several months, how would you fill that order? A. You are referring still to 80 per cent nitric as Judge Sullivan did?

Q. Yes. A. The only possible way to ship it would be to put in a certain percentage of sulphuric acid and ship it in tank cars.

Q. That is the only possible way to fill it? A. That is the only possible way to fill it.

Gen. Appr. Brown. Why not ship it in glass? A. Because with a movement of that tonnage it is a practical impossibility.

Q. Why is it a practical impossibility; what are the reasons that make it such? A. The reasons that make it such are the number of carboys required would be enormous, and as conditions have existed since I have been acquainted with the trade would be unobtainable within a reasonable time, and in addition to that the handling of that tonnage in glass would represent a railway movement three or four times as great as a tank car movement because of the limited number of glass carboys that can be put on one car, and the

whole proposition would be so prohibitive that I don't think it would be seriously discussed by any acid manufacturers or dealers. If we had considered the movement of this acid in carboys from this Canadian plant and had gone out and tried to buy those carboys, we couldn't have done it; we regarded that as absolutely prohibitive, and the arrangements under which we could make the explosives for which we had the capacity in the United States with nitric acid made in Canada were absolutely dependent upon a feasible commercial movement of the acid in tank cars, and had we not thought that permissible and free of duty and practicable the acid would never have been brought down, or never in carboys; it was commercially prohibitive to do that.

By Gen. Appr. Sullivan:

Q. You could not have made this nitric acid at your plant in Pennsylvania? A. We could have if we had had the facilities there, but we didn't have the facilities there to do it.

Q. You could by the expenditure of your money; you could have gotten the facilities? A. We could have installed the facilities, but it would have taken considerable time.

Q. Then the question resolved itself down to a matter of two propositions, first as economy and second expedition; those were the two ideas in your mind in getting it in Canada rather than Pennsylvania? A. Yes; those were, but the real essential situation was that the United States Navy wanted some trinitrotoluol in a hurry, and they combed this country to find the nitrating capacity for producing it, and we had the capacity for producing it, but we didn't have any nitric acid, and we said we have a nitric-acid plant in Canada, and we will make it and give you this trinitrotoluol, and the Government accepted it on those terms, and when the question of duties came up we knew that nitric acid and sulphuric acid were free, and we thought this, that a minimum amount of sulphuric added to the nitric to make it possible to ship would be construed as not coming under the dutiable clause. There was a little bit of theory about that, and we had recourse to these decisions, and we became more and more satisfied we were correct on it, because it seemed that the original tariff act mentioned a mixed chemical or a chemical mixture and——

Mr. Lawrence. I object to all this as not being in answer to any question and argumentative.

Gen. Appr. Brown. Taking Mr. Pratt's place now.

Gen. Appr. Sullivan. It is quite interesting but rather argumentative.

Gen. Appr. McClelland. It seems that we are developing a rather unusual situation in the trial.

Mr. Lawrence. I must ask that the voluntary statements of the witness be stricken from the record.

W. L. Wollenberg.

Gen. Appr. McClelland. It seems to me that while Congress may have passed the law to fit conditions as existing in 1913, we were not asked to review or construe the law in such a way as to fit conditions that have existed since.

Mr. Roberts. The law has got to be construed to fit the existing conditions.

Mr. Lawrence. I had a motion to strike out the voluntary statement of the witness as not being in response to any question.

Gen. Appr. McClelland. I don't know where to begin or where to leave off if I should be in favor of granting your motion. I think we will let it stand. You may rely upon the Board to determine what is evidence that should have weight and which is mere oratory or surplusage.

Mr. Lawrence. That is quite satisfactory.

By Gen. Appr. Brown:

Q. Do I understand you did make the nitric acid in America? A. We do make it.

Q. And then ship it all over the country? A. Principally we use it at the place where it is made. Such shipments as we make are in order to equalize conditions, but they are not a fundamental part of our plans.

Q. What I want to get at is what proportion of the ordinary plant is shipped in tank cars in this way and what proportion is shipped in glass carboys. I thought you knew something about that? A. I will say at our plant in Indiana, where there is a surplus of nitric-acid capacity that they can't use lying on the spot, we have been shipping for the last six months nitric acid to other plants in substantially the same mixture as was shipped from Drummondville, and not a single carboy has been shipped out of this plant with acid; all the movement has been made with tank cars and with sulphuric added in substantially the same proportions.

Q. If I wanted to get nitric acid for a laboratory I couldn't get it this way, because I wouldn't want a tank car. A. No, sir; you could get it in glass bottles or carboys.

Q. From your experience, when a man orders nitric acid in quantities sufficient to carry on some commercial enterprise, would he generally get a quantity as large as a tank car or a smaller quantity? A. Well, in the explosive and dyeing industries and the color industry the quantities would be such that cars would be required, but there are undoubtedly a lot of small applications of nitric acid where carboy shipments would be the medium employed, particularly as usually in those same applications it is not the strongest acid that is required.

By Gen. Appr. McClelland:

Q. Could you imagine outside of war conditions the use or the transportation of it in carload lots? A. I don't think it occurred to any extent before the war conditions.

Q. But suppose we should suddenly find ourselves in peace conditions again, could you conceive of any possible use of it that would require the transportation of it in carload lots? A. Well, the domestic explosive game business would still go on, making dynamites, and would require it in tank carload lots.

By Gen. Appr. Sullivan:

Q. As I understood you, prior to 1913 the medium of transportation was usually carboys or glass jars? A. I think it was, because the high strength nitric acid was not required in the arts, and those plants like high explosives plants and dynamite plants, which would want high strength nitric acid, invariably made it themselves. It wasn't the economic thing to do to make it somewhere else and bring it to your plant after it was made in those large quantities in high strengths; and that still is the economic thing to do, but special conditions have caused this to be transported.

By Mr. Pratt:

Q. But personally you had no experience in 1913? A. None at all.

Gen. Appr. Brown. These regulations of the Interstate Commerce Commission go back, as they relate to tank cars for the shipment of nitric acid; do they go back to 1913?

Mr. Pratt. They were promulgated—these went into effect October 1, 1914. They were drawn up, I think, in July.

Gen. Appr. Brown. Previous to that was there any regulation?

Mr. Pratt. I will have the man on the stand right after this who can testify. There were because they were promulgated in pursuance to the Interstate Commerce act of 1909.

Gen. Appr. Brown. Did one of the regulations apply to the shipment of nitric acid in tank cars?

Mr. Pratt. That I don't know, but I can bring it out by the next witness. That is all, Mr. Wollenberg.

By Mr. Lawrence:

Q. In what quantities do you manufacture nitric acid? A. Why the largest plant that we have, which is located at Emporium, Pennsylvania, manufactures four million pounds per month, and there is an additional capacity which has been recently erected to increase that perhaps to six million pounds a month.

Q. That is at Emporium? A. Yes.

Q. How long has that production been going on in these quantities? A. The plant went into operation in 1915.

Q. Yes. A. And probably that production of four million pounds was reached early in 1916.

Q. Have you any knowledge of the quantity produced in 1914? A. At that particular plant?

Q. Yes. A. There was no plant there in 1914, that plant was built for war purposes.

Q. What is the raw material from which you manufacture nitric acid? A. Nitrate of soda and sulphuric acid.

Q. What object is there, if any, to bring that material down from Canada and making your nitric acid in Pennsylvania? A. You refer to the period during which we shipped it down?

Q. Well, during the past year? A. There were no facilities in our possession in the United States where it could be made.

Q. In other words, you mean you were making nitric acid to the capacity of your plant? A. Exactly.

Q. If this plant were larger you could just as well bring the raw material down and make it at your plant in Pennsylvania? A. Yes, as a matter of fact the raw materials don't originate entirely in Canada, some of them were taken up there.

Q. But they get to the plant at Drummondville and there you make it up into nitric acid? A. Yes, the sulphur that makes the sulphuric acid for the nitric acid goes from our works; the nitrate of soda comes from Chili.

Q. So you are shipping those things to Canada to make into a finished article which you reimport back into Emporium, is that right? A. That is correct, because of lack of the manufacturing facilities in the United States.

Gen. Appr. McClelland. Did you create the facilities in Canada? A. They have been created a year or two previously and were idle at this particular time due to certain conditions in Canada.

Q. Was that plant at Drummondville created after the war broke out? A. Yes, it was created originally to work on some Russian contracts, and was idle at this particular time.

Mr. Pratt. And wasn't it true, if I may interrupt, the Government was in a hurry, the Navy for this trinitrotoluol?

Mr. Lawrence. That is objected to as immaterial.

Mr. Pratt. All right.

Gen. Appr. McClelland. Do you withdraw the question?

Mr. Pratt. Withdraw it.

Q. What is the strength of the nitric acid which you manufacture at Emporium, or has it a variety of strengths? A. Our Emporium plant would give about the same product as any of our other plants because they are all built and operated in substantially the same way, and we figure upon getting between 85 and 90 per cent nitric as the total product of the plant.

Q. And you sell a certain amount of that, do you? A. We have never been sellers of nitric acid until a few months ago when a fire in one of our plants gave us some excess capacity which the Government is taking.

W. L. Wollenberg.

Q. And when you sell do you sell it in carboys? A. Why, we sell substantially all of it in tank cars with sulphuric acid mixed in it, although we have an order from the United States now for some weak nitric acid in carboys. The order is two and a half months overdue because they haven't yet gotten the carboys.

Q. What is the quantity of acid in that order? A. I think that it is 700 tons per month, which was supposed to have started a couple of months ago and hasn't because the Government can't get the carboys; they are to furnish the carboys and haven't succeeded in doing so yet.

Q. You stated you were using or making 1,000 tons a month, of something, didn't you, nitric acid was that?

Mr. Pratt. His importations from Canada were 1,000 tons a month.

Q. Is that the fact, these importations from Canda come at the rate of 1,000 tons a month? A. I said we were manufacturing between one and a half and two and a half million pounds of nitric acid which would be between 750 and 1,250 tons of nitric and that with the sulphuric added would give a somewhat higher tonnage.

Q. When you say you are manufacturing do you mean at Emporium or Drummondville or both? A. At Drummondville.

Q. How much are you manufacturing at Emporium? A. We have been manufacturing about four million pounds a month there.

Q. And do you use all the nitric that you manufacture for the same purpose that you used this mixture you are importing from Canada? A. No, not all.

Q. What other purposes do you use it for? A. Well, we use nitric acid in every explosive that we make, and we make the whole list of them.

Q. Do you use nitric for some purposes in which it is not necessary to combine sulphuric acid with it? A. We are not making any use of nitric at present without sulphuric combined with it.

Q. Have you at any time used nitric for purposes which did not require the combination of sulphuric with it? A. In the previous practice in our picric acid plant we treated phenol, which is one of the base materials, with sulphuric acid first and then added the nitric acid, but it brought about the same result, so that the net result was the phenol was treated by the combined acids, but they were not added combined.

Q. Did you get the same result as you would if you had united the nitric and sulphuric acid before treating the phenol? A. Probably not exactly the same result.

Gen. Appr. McClelland. Have you ever since you began to import this mixture from Canada used nitric acid without the addition of sulphuric acid? A. We have.

Q. For what purpose? A. In the nitration of picric acid the sulphuric having already been added to the phenol.

Q. But in the manufacturing of picric acid you wouldn't as a general commercial proposition use a mixture of sulphuric and nitric, would you? A. We do use a mixture now of sulphuric and nitric, we do, and it is an enormous advantage commercially over the other system.

Q. Well, I understood you to say, a few minutes ago, you didn't combine sulphuric and nitric in the nitration of picric acid? A. I say we do now, but our former practice was not to, but it is a great commercial advantage to us in doing it and we do it now, have been for quite a number of months. I forgot the exact time.

Q. At the present time, then, you have no use for nitric acid except in combination with sulphuric? A. That is correct.

Q. Well, I mean by that that the combination takes place before you use either acid? A. That is correct, there is no place in any of our processes where we are using nitric acid without its having been mixed with sulphuric before being added to the reaction.

Q. When you spoke of the Government fixing the price—— A. I have to qualify that answer; I overlooked the question of ammonium nitrate, which is one of the things we make and in which we use nitric acid without any sulphuric whatever.

Q. Just what is that product? A. Ammonium nitrate.

Q. You make that with the use of nitric acid alone? A. With the use of nitric acid alone.

Q. Could you make that with nitric acid and sulphuric acid in combination? A. I don't think so.

Q. When you stated the Government fixed the price of nitric acid and the price of sulphuric acid, what did you have reference to, what price-fixing scheme is this? A. Why, the price-fixing committee of the War Industry Board has from time to time fixed the prices, and the ones that I mentioned were ones that became effective September 30th.

Q. 1918? A. 1918. At the present time I only have a clipping from the official United States bulletin.

Q. That is the Creel publication? A. That is the Creel news publication, and eventually this will be promulgated as an official document. This is not an official document.

Mr. Lawrence. That is all.

By Mr. Pratt:

Q. Mr. Wollenberg, what is the output of ammonium nitrate in your plant? A. It is about from one million to one and a half million per month.

Q. And that is the only thing in which you use nitric acid alone? A. That is.

Q. And what, how does that output compare with the total output of your plants of other things, or explosives, what percentage? A. Well, our output of ammonium nitrate——

Q. No; I mean percentage, weight, and value? A. It is probably one-eighth by weight, I would have to calculate the value.

Q. Ten or twelve per cent by weight? A. Ten to fifteen per cent, but it is much less by value, the value will be much less than that.

Q. You mean the percentage by value is much less than it is by weight? A. Yes.

Q. Because the ammonium nitrate is so much less valuable? A. Yes; it is one of the cheapest explosives.

Q. In the manufacture of picric what are the proportions in which you use sulphuric acid and nitric acid? A. I haven't that in mind.

Q. Is it as low as 20 per cent sulphuric, or is it as low as 40 per cent or 60, or approximately what? A. The thing is complicated because part of the sulphuric is put in with the nitric and part of it has been previously put in and partly reacted with the phenol.

Q. Then there are two processes you must go through? A. Yes, two, what the actual composition is when that nitration occurs I don't happen to be informed.

Q. Let me ask you this, can you in the manufacture of picric acid, in either one of those two processes through which it has to go, use nitric acid in combination with sulphuric in just the exact proportion in which it was imported in these lots? A. No, you could not.

Q. In other words, you would have to add more sulphuric to it in order to use it in making picric acid? A. Yes, it is an entirely different composition.

Q. And that is true of all the processes in your plant, in all the products of your plant, that you always have to add to the nitric and sulphuric brought in in the percentages of which these cars were filled, more sulphuric to make the final product? A. That is correct.

Q. Now, you can't get these raw materials in Canada of which you make your nitric acid? A. No, they are not available there.

Q. They are shipped from various parts of the world? A. They all go through the United States, but the nitrate of soda comes to the United States from Chili.

Q. And it would have been, so far as the economical side of the matter is concerned, cheaper for you to have made this in this country, this nitric acid in this country, would it not? A. Yes, it would have. After the amortization possibly the value of the plant raises in a reasonable length of time, but we couldn't start this particular operation except by bringing it down from Canada because of the many months needed to bring the plant at Emporium in condition to produce the nitric acid required.

Q. I understand the Government wanted this immediately, and there was only this one plant at Drummondville available where you could immediately make it, the needed nitric acid to fill the requirements? A. That was the situation, and had our contract run over a period of years instead of being placed dependent on the war situation, we would only have brought that acid down for a long enough time to bring our plant up to the needed operating capacity in the United States.

Q. Provided you could at any time, but these are trying times. A. Yes.

Q. But I mean, leaving that whole question to one side, that amortization, would it or would it not have been more economical to have made this nitric acid in this country for the purpose of its entering into the output of trinitrotoluol that you used it for than to make it up in Drummondville, where you did make it? A. Very much more economical.

Q. By reason of what facts would it be more economical? A. By reason of the savings in freight on raw material going to Canada, and the finished product back from Canada.

Q. And the finished product back from Canada was increased in bulk and weight by the fact that you had to add sulphuric to the nitric to get it at all? A. It was.

Q. Therefore you had to pay more freight on the combined product than if you had brought in the nitric alone? A. Yes, sir.

By Gen. Appr. McClelland:

Q. Would you say that the mixture that you are importing could be any longer known as either nitric acid or sulphuric acid or has it ceased to be either? A. It has ceased to be either.

Q. And is known as a mixture? A. It has ceased to be either so far as calling it either, excluding the other, and being correct, but in common use, for instance, in our company——

Q. No; never mind about the use: I didn't ask about the use.

Mr. Pratt. Weren't you going to add something more to your explanation, Mr. Wollenberg?

Mr. Lawrence. I object to that question; he answered Judge McClelland's question.

Gen. Appr. McClelland. If he hasn't answered my question, all right.

The Witness. I would like the privilege of striking that out and answering your question anew.

Mr. Lawrence. I object to that, to the answer being stricken out.

Gen. Appr. McClelland. Let it stay, and you can answer it again.

A. The mixture could not properly be called nitric acid and it could not properly be called sulphuric acid without qualification.

Q. Is it in fact a mixture? A. It is in fact a mixture and would be called a mixture.

By Mr. Pratt:

Q. How would it be called, would you call it a mixed acid? A. We did call it a mixed acid because in order to bill the material

properly, ship it properly without violating the regulations we could not call it nitric acid or sulphuric acid. We would have to call it mixed acid because of the Interstate Commerce Commission regulations.

By Gen. Appr. McClelland:

Q. But, as a matter of fact, regardless of the regulations, can it be called either nitric acid or sulphuric acid? A. It can not be called that without qualification.

Q. You see, I didn't ask you anything about regulations; I was asking you as a scientific man whether it could be called either or whether it was in fact a mixture of acids.

By Mr. Pratt:

Q. That is how you invoice it and describe it in your entries, as mixed acids? A. That is correct.

Q. Because the regulations direct it, but now in the trade would this be bought and sold as mixed acid, unqualified mixed acid, or would it be bought and sold under some other name?

Mr. Lawrence. That is objected to because this witness's experience is limited to his own concern; he can't speak for the trade.

Mr. Pratt. He has had considerable dealings with the trade as manager of one of the largest companies in the country.

Gen. Appr. McClelland. I think, Mr. Pratt, as far as it is disclosed, all the witness can be expected to say in answer to your question is what he would personally do. I don't think that he has had any commercial dealings in the commodity at all. Your question not only takes in what he might do, but what others might do.

Mr. Pratt. You were asking the question whether it might be called nitric acid or sulphuric acid.

Gen. Appr. McClelland. I was asking him as a scientific man.

Mr. Pratt. I would like to have him go on and explain what he meant.

Gen. Appr. McClelland. Wait a minute; see if I understand the question correctly.

Last question by Mr. Pratt repeated by the reporter.

Gen. Appr. McClelland. See how comprehensive your question is; you want to know what others would do, and it doesn't appear he has had any contact to say what others might do in dealing with this commodity.

Q. Let me put it this way: Mr. Wollenberg, are there any transactions—or have there been any transactions, rather—in this particular commodity which was imported; that is, a commodity containing approximately 20 per cent sulphuric and 79½ per cent nitric—— A. 72 per cent nitric.

Q. 72½ per cent nitric? A. Yes; we have at different times been short of nitric acid; in order words, could not produce enough for our purposes and have gone into the market to buy it.

Q. Now, when you have done that how has it been described?

Mr. Lawrence. That is objected to on the ground that it doesn't antedate the passage of the act.

Gen. Appr. McClelland. If it is shown that this witness has personally conducted the transactions, the Board will allow him to answer the questions.

Mr. Lawrence. Exception.

A. It has been described——

Q. Have you personally conducted those transactions?

Gen. Appr. McClelland. You personally?

A. Conducted the negotiations; no.

Q. But they have gone through your hands?

Gen. Appr. McClelland. But he can't tell anything about what it was called or how it was dealt in if he didn't conduct the transaction.

Mr. Pratt. So far as having the actual conversation, I don't think he did have the conversation, but he did see the bills and see the correspondence in reference to it.

Gen. Appr. McClelland. You may know that, but the Board doesn't.

Q. Now, then, Mr. Wollenberg, if you didn't conduct the negotiations personally, did you see the bills and invoices and letters in reference to the matter? A. I do not see the bills or invoices, but I see the contracts that are made covering purchases.

Q. In fact, you execute those contracts? A. Usually; well, usually the purchasing agent executes them.

Q. At least you O. K. them all? A. Yes; either authorize him or O. K. them myself, and an acid of substantially this character would be bought by us——

Mr. Lawrence. That is objected to on the ground that his knowledge of the trade dealings is hearsay; he does not make the orders, he does not negotiate the sales, he merely sees the contracts drawn up by a salesman, I understood him to say.

Mr. Pratt. It is a contract by his own party for a purchase which he authorizes them to enter into.

(Remarks at this point ordered off the record.)

Gen. Appr. McClelland. Sustain the objection.

Mr. Pratt. Exception.

Q. Do you know whether this commodity imported having these percentages of nitric and sulphuric acid has a particular trade designation which distinguishes this commodity from any other commodity? A. I have heard the term strong mixed acid applied to it.

Q. Is that the only term you have ever heard used? A. I have heard the term high nitrate mixed acid applied to it.

Q. Applied to this commodity here? A. Yes, sir.

Q. Have you ever heard the term mixed acids? A. I can't say with positiveness whether I have ever heard it called mixed acid; I may have.

Q. You did testify, did you not, a little while ago that mixed acid in the trade always refers to something having at least 45 per cent sulphuric? A. I said that was my understanding of it, and I would so understand some one who referred to it that way.

Mr. Pratt. Yes; that is all.

Mr. Lawrence. That is all.

* * * * * * *

C. P. BEISTLE, called as a witness on behalf of the Importers, having been duly sworn, testified as follows:

By Mr. Pratt:

Q. Mr. Beistle, what is your business? A. Chemist with the Bureau of Explosives.

Q. How long have you been connected with the Bureau of Explosives? A. Since 1907.

Q. And when did you graduate? A. 1898.

Q. What degree have you received? A. B. S.

Q. Where did you graduate? A. Princeton.

Q. And you have been engaged as a chemist ever since you graduated? A. Yes.

Q. What is the Bureau of Explosives? A. The Bureau of Explosives is an organization started by the American Railway Association to safeguard the shipment of explosives on railroads.

Q. Well, only explosives? A. Well, it was started only for explosives, but subsequently it was found necessary to enlarge its activities to take in other dangerous articles besides explosives.

Q. So its activities now cover both explosives and other dangerous articles? A. Yes, sir.

Q. Is it a bureau which has any connection with the Interstate Commerce Commission? A. Well, the bureau is charged with the enforcement of the Interstate Commerce Commission regulations, and is recognized in an advisory capacity in making—in suggesting these regulations to the Interstate Commerce Commission and making investigations, etc. Of course the Interstate Commerce Commission is not bound in any way to follow our suggestions, but they confer with us on that—on working out these regulations.

Q. And the regulations when promulgated by the Interstate Commerce Commission are the result of the suggestions which you have made and their own views on the matter? A. Well, their own views on the matter coupled with our suggestions; yes.

Q. These regulations that were put in evidence, Exhibit 2, are regulations which went into effect on October 1, 1914, are they not? A. Yes, sir.

Q. One of the judges asked the question whether there were other regulations or any regulations on this subject prior to these? A. Yes; there were; that was merely a revision of a preceding set of regulations, and the first lot went into effect in 1911, and I am not sure but what there was a preceding set in 1909. I haven't got the data on those fixed in my mind, but I know it was back as far as 1911 certainly.

By Gen. Appr. McClelland:

Q. Covering nitric acid? A. Covering nitric acid.

Q. In tank cars? A. Of course it don't cover nitric acid in tank cars because it can't be shipped in tank cars. I think our previous regulations covered this with just a slight modification in the revision.

Mr. Lawrence. Are these regulations in evidence?

Mr. Pratt. Yes.

Gen. Appr. McClelland. Those were received this morning.

Mr. Lawrence. My understanding is the copy of the Interstate Commerce Commission regulations were introduced this morning.

Gen. Appr. McClelland. That is what he is talking about.

Mr. Lawrence. I thought he was talking about the Bureau of Explosives.

By Mr. Pratt:

Q. Your bureau is a subordinate body of the Interstate Commerce Commission, is it not? A. In that respect; yes.

Q. And there were regulations prior to 1914 which to all intent and purpose were the same as these? A. They were gotten up in the same way.

Gen. Appr. McClelland. The same requirements about shipment of these acids? A. Yes; there might be some slight detail of change, but the requirements in regard to such acids were then as they are now.

Q. You made the statement a moment ago that you couldn't ship nitric acid in tank cars; you mean by that what is commonly known as nitric acid? A. Yes; I remember.

Q. What is commonly known as nitric acid? A. Well, the most common nitric shipped as such, nitric acid——

Mr. Lawrence. I object to that statement; it is not in answer to the question.

By Gen. Appr. McClelland:

Q. What is nitric acid? A. As commonly known, as most commonly known the mixture of nitric acid and water having about 67 per cent nitric acid.

By Mr. Pratt:

Q. Well, when you use the word nitric acid in buying and selling with no further description what you would get would be that product? A. Yes.

Q. 67 per cent nitric and the balance water? A. Yes, sir.

Q. Water is a chemical, too, isn't it? Well, it is a chemical compound.

Q. Well, nitric acid HNO_3, is a chemical? A. Yes.

Q. Then, when you made the statement that nitric acid could not be shipped in tank cars—— A. I meant the high strength nitric acid, nor could the other, the 67 per cent couldn't be shipped.

Q. What do you mean by high strength? A. The strongest percentage is 90 per cent, which is made for special purposes, nitrating, etc.

Q. That is what you call high strength nitric acid? A. Yes, sir.

Q. Is any nitric acid made and sold commercially which is anhydrous, which has no water?

Mr. Lawrence. That is objected to on the ground that so far as I know this witness hasn't testified to commercial experience.

Gen. Appr. McClelland. No, he hasn't; objection sustained.

Q. What has been your experience, Mr. Beistle, since you left college? A. Well, I was with the Bay Street Experimental Station for three years, with the Bureau of Ordnance, War Department for six years, and since that time with the Bureau of Explosives.

Q. And what are your duties in the Bureau of Explosives? A. Well, it is a question of technical adviser with regard to hazardous commodities and with respect to their shipment, packing, handling, etc., that sort of thing.

Gen. Appr. McClelland Have you had any experience in the buying or selling of acids in a commercial way? A. Not on a large scale, only with regard to the transportation of them.

C. P. Beistle.

Q. But has your experience in the bureau in connection with transportation matters brought you into touch with commercial conditions? A. It has.

Q. With reference to these acids? A. With respect to what is shipped.

Q. What was shipped in tank cars prior to, we will say, the opening of the war?

Mr. Lawrence. That is objected to on the ground that this witness never shipped anything in tank cars. I don't know this witness ever shipped anything in tank cars.

Mr. Pratt. He just said his duties required him to keep in touch with the shipments of explosives and other dangerous matters.

Gen. Appr. McClelland. He can state if it was within his knowledge that acids were shipped in tank cars prior to 1914. Objection overruled.

Mr. Lawrence. Exception.

Last question by Mr. Pratt repeated by the reporter.

A. Mixed acids.

Q. What do you mean by mixed acids? A. Well, the mixtures that were shipped in those times were generally nitrating acids, fortifying acids.

Q. What do you mean by nitrating acids? A. Nitrating acids, I mean the acids which were used directly in the manufacture of nitroglycerine or nitrocellulose or other nitro explosives.

Q. Well, what do you mean by a fortifying acid? A. Fortifying acids are mixtures of nitric and sulphuric acid which are used to bring up the spent acids remaining after the nitrating processes.

Q. What do you mean by spent acids? A. A spent acid is a mixture of sulphuric and nitric and water in which the nitric acid has been decreased and the water is increased to an extent they can't be used again in that particular condition, you have to add more nitric acid to bring up the strength—more nitric and sulphuric to bring up the strength to a definite amount.

Q. And it is for bringing up that nitric acid a fortifying acid is used? A. Yes.

Q. Now, what percentage of strength does a nitrating acid have, what percentage of nitric acid? A. Why, as far as my observation goes, they vary from 60 per cent sulphuric, the lowest, to 75 per cent, the highest.

Q. And what percentage of sulphuric does the fortifying acid have? A. Generally between 47 and 50 per cent sulphuric acid.

Q. And were there any other mixtures of other percentages of nitric and sulphuric acids shipped in tank cars prior to the beginning of this war? A. Not to my knowledge.

Q. Well, you were in a position to know as you knew about ship-

ments of such matters in interstate commerce? A. Yes; I knew generally, of course I didn't know every carload shipped.

Q. I understand you didn't personally have knowledge of every car shipped but your duties in this bureau require you to keep in touch with shipments of all explosives and dangerous articles? A. Yes.

Q. The bureau has inspectors? A. They have.

Q. Which go around the country and inspect such shipments? A. Yes.

Q. And make reports thereon? A. Yes.

Q. And inspect the contents of cars and carboys? A. They inspect cars and containers; they do not examine every shipment of acids, they do not report the contents of every car that comes under their observation, but we have general knowledge of the type of commodities, of hazardous commodities that are shipped through inspection and knowledge and acquaintance with the manufacturers.

Q. And these inspectors have power, do they, to prohibit shipments of explosives and other dangerous articles which do not conform to the regulations? A. Yes; they have.

Q. The law gives them that power, does it not? A. Yes.

Q. Prior to the beginning of the war were there any shipments of nitric and sulphuric acid mixed in which the sulphuric acid was a smaller percentage than 45 made in tank cars, as far as you know? A. Not as far as I know.

Q. Then it is true that since the war began conditions have changed in respect to such shipments, is it not? A. To some extent, yes.

Q. And what has caused that change? A. Well, the change has been due to the enormous expansion of the explosive industry, and the fact that often there has been a shortage of acid, of either one kind or the other, and if there is a shortage of nitric acid rather than sulphuric acid, the idea will be in moving the nitric—will be to move the nitric with as little sulphuric as was possible to a place where it was made so as to gain the maximum service from the tank car equipment.

Q. In other words the primary idea was to transport nitric acid? A. It has been in some instances.

Q. And sulphuric acid was added merely because it was necessary? A. Because they had to do it to get the stuff carried safely in tank cars.

Q. Why is it that you must add sulphuric to nitric to carry it safely? A. Nitric acid alone very strongly attacks iron or steel consequently if you put it in a tank car it would very shortly destroy the tank car and eat a hole through it and leak away and you would not only lose the acid but the tank car would not be in a serviceable condition.

Q. The result of the leaking away would be to cause a dangerous fire? A. Of course there wouldn't be such a great danger of fire, it

would leak out on the ground. The main thing would be the value of the acid.

Q. But if it leaked out in a yard where there was flammable material near—— A. Oh, yes; it would be very likely to cause a fire; it does cause a great many fires.

Q. Has the bureau been engaged in conducting experiments to ascertain what is the lowest percentage of sulphuric acid which must be added in order to safely transport nitric acid in tank cars? A. During the present year we have carried out some experiments to find out what will be the least amount of sulphuric acid to protect iron from nitric acid. These experiments are not yet complete, and from the very nature of the question we can't make them wholly complete, because other factors come in besides the question of sulphuric and nitric—the question of the amount of water in the acid.

Q. In other words, the percentage of water has something to do with the corrosive effect of the liquid? A. Yes; it has; the more water in it up to a certain point the more corresive the action is; that is, corrosive to iron.

By Gen. Appr. Brown:

Q. Is that what the sulphuric acid does, removes the water? A. Well, it is like this; sulphuric, strong sulphuric acid can be shipped in a tank car by itself, and a weak solution of sulphuric acid and water will attack steel very strongly, but if it is a large percentage of sulphuric it does not attack the steel. Now, the same thing holds true with the nitric acid; that is, the sulphuric apparently takes up some of the water that is in the nitric acid. That appears to be the way it works. Of course, that is a question of theory as to just how it acts.

By Mr. Pratt:

Q. It hasn't yet been established just what the chemical action or reaction is, if there is any? A. No; I don't think so. I don't know why it is, exactly. I know that is the general effect of it.

Q. That is, the result of adding sulphuric is it doesn't eat the car, but why you don't know at the present day? A. No.

Q. In the fall of 1917, beginning with September and running up to January, 1918, had these experiments gotten along to any great degree? A. We hadn't started them, because the question at that time had not come up, because there was no demand ever came to us as to what was the least amount of sulphuric acid you could put in these mixtures. The general custom was to ship high strength sulphuric mixtures, and everybody knew that they were safe to put in steel containers.

Q. By high strength you mean something containing over 45 per cent of sulphuric, at least? A. Yes.

Q. So, in other words, prior to last fall no mixtures had been shipped in tank cars which contained, as far as you know, less than 45 per cent sulphuric acid? A. I hadn't heard of any.

Q. And the question of how small a percentage of sulphuric acid was necessary to add to prevent the corrosive effect of the nitric acid on the car had not become a practical question? A. Well, not to any extent. I had heard inquiries from time to time, and I had inquired from a number of acid people and explosive people as to what was the minimum amount of sulphuric acid which could be used, and the general concensus of opinion was that it would require about 25 per cent of sulphuric acid in those mixtures to safeguard the steel containers.

Q. You mean at least 25 per cent? A. Yes.

Q. And that was the opinion of the bureau at that time?

(No audible answer.)

By Gen. Appt. Brown:

Q. 25 per cent by weight or by volume? A. Always by weight. That was our opinion; that is the way we arrived at the opinion, by inquiring from people who had experience along those lines.

Q. Well, what percentage by value would that be? A. Well, that would depend, of course, on what the then values of acids were. Sulphuric acid is always—yes, as far as I know, always—lower priced than nitric acid, and just what those values are I do not know; that is a matter I don't deal with much, on the exact values; but it is, I should say, at the present time four or five times—nitric acid is four or five times the value of sulphuric.

By Mr. Pratt:

Q. The prices are something of which you have no particular knowledge? A. No; I have no particular interest in that; I just read about it in the quotations, and that is all; we are not concerned with it at all.

Q. Now, was it practicable, so far as your personal knowledge and experience with the bureau is concerned, to ship large quantities of nitric acid in glass carboys? Was it practicable as a commercial proposition? A. It isn't practicable, for the reason that it is very much more expensive. The carboys are worth about $5.00 apiece, and you can only get about 200 of them in a car; in other words, that reduces the car capacity, instead of getting carload capacity to about 28,000 pounds.

Q. Well, what is the capacity of a tank car? A. Well, a tank car will hold around 100,000 pounds.

Q. 80,000 is one. A. How much?

Q. 80,000. A. Of course, tank cars vary in size, but I have seen tank cars carry 100,000 pounds of acid.

Q. These, I think, averaged around 90. Was it possible to get carboys to use in making a large shipment? A. Well, my information is last year carboys were very scarce, and I heard a great many of the acid shippers complaining and talking about the difficulty of

getting acid carboys in any quantity, and I know the manufacturers couldn't supply the demand. Of course that is hearsay information; I wasn't in the market for myself.

Q. Take a shipment of 1,500 tons per month, was it possible from what you have heard to have obtained enough carboys to handle such a shipment as that? A. No, I don't think it was possible at that time.

Q. And furthermore that would have greatly increased the amount of car movement. A. Yes, it would have been increased; it would have made about three cars to one.

Q. I notice the regulations say you may ship all gravities of nitric acid in glass bottles not exceeding seven pounds capacity, that is a small bottle for chemical use? A. Yes, it is what they call a five-pint bottle, a small bottle.

Q. Seven pounds means pounds by weight? A. Pounds by weight, seven pounds nitric acid.

Q. It holds five pints of water? A. Yes.

Q. The testimony of Mr. Wollenberg was the specific gravity of this nitric acid manufactured in Canada was 1.4904; was there any form of container in which that acid could have been shipped without the addition of sulphuric except one of these seven-pound bottles and that to be put in a metal container? A. No, that is the only container permitted by the Interstate Commerce Commission regulations for nitric acid of that strength.

Q. So far as you know was there any other form of mixed acids shipped in interstate commerce except nitric and sulphuric? A. Mixed acids, no; I never heard of any.

Q. Well, before were there any mixtures of acids other than nitric and sulphuric? A. No.

Q. Of course any mixture of two acids would be chemical mixture? A. Yes, it would be a chemical mixture; I was merely answering I know of there—I do not know of there being any other mixtures shipped.

Q. But it is true, is it not, that any mixture of two or more acids would be a chemical mixture? A. Undoubtedly.

A. And it is true also that nitric acid and water is a chemical mixture? A. Yes.

Q. And sulphuric acid and water is a chemical mixture, is it not? A. Yes.

Q. And ordinary nitric acid which contains 67 per cent nitric acid is a chemical mixture also? A. Strictly speaking it is.

Q. That is from a chemical point of view? A. From a chemical point of view.

Mr. Pratt. That is all.

By Mr. Lawrence:

Q. Mr. Beistle, nitric acid is a chemical, isn't it? A. Well, it is spoken of as a chemical, yes.

Q. It is one of the heavy chemicals? A. Yes, it is generally considered as one of the heavy chemicals.

Q. It is a chemical compound, isn't it? A. Yes, it is a compound.

Q. It is a chemical compound? A. It is a chemical compound.

Q. Is water a chemical in the sense that nitric acid is a chemical? A. Well, it depends on which sense you mean. Scientifically speaking it is a chemical compound; of course it isn't a chemical in the chemical trade, you understand.

Q. Well, water is not a chemical in the sense that nitric acid is a chemical, is it? A. In one sense, yes, it is; do you mean a chemical compound?

Q. Well, it is a chemical compound, but you apparently recognize a class known as heavy chemicals? A. Yes.

Q. Of which nitric acid is one? A. Yes.

Q. Sulphuric acid is another, is it not? A. Certainly.

Q. And would you expect the trade to classify water as a chemical? A. No.

Q. And when you spoke of it as being a chemical compound you have used that expression in the sense of its being a union of hydrogen and oxygen? A. A chemical compound of hydrogen and oxygen, yes.

Q. Water is naturally present in nitric acid, is it not? A. As ordinarily made, as it is made, as usually made water is always present in nitric acid.

Q. Were you connected with the Bureau of Explosives prior to October, 1913? A. Yes, since 1907.

Q. 1907 and were your duties in 1913 the same as they are to-day in that Bureau? A. They were.

Q. Can you tell me how long the present requirements as to the methods of shipping sulphuric acid or nitric acid have been in force? A. Well, there might have been some slight modification in that revision that you have there, but essentially they have been in force since 1911 or 1909; I don't recall just when the first regulations went into effect.

Q. Well, have the regulations as indicated in article 1858 with reference to mixed nitric acid and sulphuric acid been in force the same length of time? A. I don't recall any change in those regulations, in that part of them, certainly not in any essential.

Q. You are familiar with article 1858, are you? A. Yes.

Q. And that refers specifically to mixed nitric acid and sulphuric acid? A. That is what it says, I believe.

Q. Well, when you speak of mixed acids, nitric acid and sulphuric acid, do you use those terms in the same way they are employed by the Interstate Commerce Commission? A. You mean when I use the terms?

Q. As you have used them in your testimony? A. Well, that depends on what you are talking about; if you are speaking of the commercial article nitric acid or nitric acid as HNO_3, the chemical

compound. When I said that nitric acid, ordinary nitric acid, had 67 per cent nitric acid I meant 67 per cent HNO_3 and the rest water.

Q. And that is what is known, is it, as nitric acid? A. That is, when nitric acid is handled and used by itself, that is the common variety of it.

Q. And the article which is so commonly known has no other acid combined with it, has it? A. No.

Q. Did you have anything to do with the drawing up of these provisions, of which articles 1855, 1857, and 1858 are a part? A. Yes; I did.

Q. You have used the terms there, nitric acid, sulphuric acid, and mixed nitric and sulphuric; were those terms borrowed from the trade, or where did you get them? A. Well, of course, in a sense you might say they were borrowed from the trade, because if it hadn't been a trade custom to ship this material there would not have been any occasion to have made regulations in regard to its transportation; in other words, there are dozens of things very dangerous that aren't in those regulations, because they are not shipped in commerce.

Q. But as far as these articles I have referred you to, in drawing up these provisions you used the terms as the trade commonly uses them? A. Yes; that is, nitric acid is specified at different strengths, the way the acid shall be used.

Q. In other words, this was as far as possible a commercial act, wasn't it? A. It is an act to regulate the commercial transportation of these commodities.

Q. But I mean you endeavored to use terms as they addressed themselves to the trade commonly? A. Yes, yes; they had to be intelligible to the shippers.

Q. There was no intention of being technical in the chemical sense, was there? A. Oh, not at all.

Q. You stated, Mr. Beistle, that nitric acid alone attacks iron or steel; are the cars in which nitric and sulphuric acid imported of iron or steel? A. I didn't see those particular cars, but it is the practice to make tank cars of sheet steel.

Q. Sheet steel; is the action of nitric acid the same on steel as on iron? A. Well, I have never made any experiments on that, but I presume it is practically the same.

Q. What is that presumption based upon? A. Well, because most all tank cars are made of sheet steel, although they probably were formerly made—some of them—of wrought iron.

Q. And you think the action of nitric acid would be the same on iron as on sheet steel? A. Oh, I don't mean to say it would be quantitatively the same, but ordinary nitric acid would have a strong corrosive effect on either iron or steel.

Q. It is your opinion that these tank cars in common use are made of sheet steel? A. Yes.

Q. If the nitric acid were c. p. would it attack the iron or steel? A. Yes—that is, if it was c. p. of the strength of which c. p. nitric

acid is made it would: I have never seen any 100 per cent nitric acid: what that would do I do not know.

Q. Would the purest nitric acid which is used commercially or industrially have the effect of corroding iron or steel? A. It does; yes.

By Gen. Appr. Brown:

Q. But not as much as the weaker? A. The stronger acid would not go quite as fast, but it would go sufficiently fast so that it would be entirely impracticable to use a steel container for it.

By Mr. Lawrence:

Q. Well, if a consumer of nitric acid required but eight or a dozen carboys a month, it would be practicable for him to import it in carboys? A. Of what strength acid?

Q. Well, we will say strength decimal 1.49—specific gravity, rather. A. Yes; you could import that much.

Q. It isn't customary, is it, to ship less than tank car fulls in a tank car? A. It wouldn't be the usual practice, because the man would have to pay the minimum carload rate, but it would probably be a little more economical to ship a half tank car of acid than the same amount in carboys, because, as I understand, there is a lower rate on tank cars.

Q. But at the same time there is nothing in the way for the user of that quantity to import it in glass carboys? A. If he can get the carboys.

Q. In normal times they used carboys; prior to 1913 weren't they in considerable use? A. Oh, yes, yes; but there was never any noticeable movement of nitric acid of high strength in carboys.

Q. When did that practice begin? A. The movement in carboys—it never began; there never has been any noticeable movement of it in carboys.

Q. I mean it has been the practice, hasn't it, to transport more or less nitric acid? A. Yes.

Q. In times past in carboys? A. Yes; but that acid, you understand, was nearly all of it what they call the 42 Baumé acid, shipped in carboys; that always has been the practice.

Gen. Appr. Brown. What is that? A. 42 Baumé; that is 67 per cent nitric acid.

Q. The consumer of that strength nitric acid can raise its strength, can't he, before he uses it? A. No: he couldn't practically do it; that is, it wouldn't—you can lower the strength of an acid, but it isn't very easy to raise the strength.

C. P. Beistle.

By Gen. Appr. McClelland:

Q. Why is it practicable to ship the 67 per cent nitric acid in carboys and not the higher percentages? A. The point is that—the great hazard in shipping nitric acid is the fire hazard; in case there is a breakage of a container it sets fire to anything that will burn, and the stronger the acid the greater the liability of this fire hazard.

Q. And 67 per cent is nearly safe? A. Well, we get lots of fires in shipment of that from breakage of carboys in spite of all precaution, and when you get above that strength you are sure to have a fire every time there is a breakage of a bottle.

By Mr. Lawrence:

Q. You are familiar, I take it, with the uses of nitric acid? A. Yes.

Q. What are the common uses of nitric acid per se? A. How, itself, you mean?

Q. Yes sir. A. Well, the principal use of nitric acid is in the explosive business and in the dyeing industry.

Q. When used in the explosive business I presume it is used in combination with the sulphuric acid? A. Mostly.

Q. When used in the dyeing industry is it used in combination with sulphuric acid? A. Sometimes it is and sometimes it isn't, because of course a great many of the processes of making dyes are similar in a way to the process of making explosives, that is, they are nitrating processes and that sort of thing.

Gen. Appr. McClelland. Is this 67 per cent nitric acid used in both instances? A. The 67 per cent is not used much in the explosive industry; there is a little bit used in making picric acid and certain other matters, but it is used more in the dye industry.

Q. Tell me again what are the common uses of nitric acid alone; you have told me the uses of it in conjunction with sulphuric acid. A. Well, they use it alone in the dyeing industry, too.

Q. And where it is required to use it alone it would be impracticable to use sulphuric acid with it, wouldn't it? A. Yes.

Q. And it is true, is it not, that sulphuric acid has many uses by itself? A. Yes.

Q. What are some of the commoner uses? A. Well, they use it by itself in refining oils and in the manufacture of fertilizers and in fact in all chemical manufacturing, you might say, sulphuric acid is one of the basic materials of any chemical manufacture.

Q. In those uses you have just described it wouldn't be practicable to use it if nitric acid were in combination with it, would it? A. Not for fertilizing purposes, nor for oil, that is, it wouldn't—no, it wouldn't be practicable.

Q. Suppose you wanted to use sulphuric acid for pickling iron, would you combine nitric acid with it? A. I don't think it would be practicable; it certainly wouldn't be economical, because nitric acid is more expensive than sulphuric.

Q. Then it resolves into this, that sulphuric acid has certain well-recognized uses of its own not in combination with other acids? A. Yes.

Q. And the same is true of nitric acid, that it has certain individual specific uses wherein it would be used without sulphuric acid? A. Oh, yes, it can be used for many purposes without sulphuric acid.

Q. Then at the present time there is a tremendous demand for the two acids combined, namely, for nitrating cotton? A. Yes, for nitrating cotton and making trinitrotoluol and picric acid and nitroglycerine.

Q. So that if these importations here which are shown to be relatively 20 to 70 per cent sulphuric and nitric, respectively, had had 20 per cent more or 25 per cent more sulphuric added, it would then have been ready for use as a nitrating proposition? A. There would have to be more than that in because for nitrating they require from 60 to 75 per cent sulphuric.

Q. Aren't there some nitrating acids in which the sulphuric and nitric will be about 49 and 48, respectively? A. Well, those are what they call fortifying acids.

Q. These are fortifying acids, then for nitrating what would you say are the usual percentages? A. Well, from 60 to 75 per cent sulphuric is required in the nitrating processes and the rest would be nitric acid and water, which of course varies depending on what they are going to make.

Q. Then how much sulphuric would one have to add to this mixture, 20 and 70, to make it adapted, adaptable for use in nitrating work? A. You would have to add enough sulphuric I think to—I would have to figure that out, but I should say roughly you would have to add twice as much sulphuric or three times, maybe.

Q. So that the presence of sulphuric acid in this mixture is no detriment to the resultant use? A. Not when it is used for nitrating, no.

Mr. Lawrence. That is all.

By Mr. Pratt:

Q. Mr. Beistle, is there any extensive use of nitric acid in industry alone without sulphuric? A. Well, it is of course much less extensive than the use of nitric acid with sulphuric, but there is considerable of it used, quite a great deal of it shipped just in carboys.

Q. Is that how it is always shipped, in carboys? A. Yes.

Q. So that the use is not such an enormous use that sufficient carboys can not be obtained? A. They have to have the carboys; if they haven't the carboys they can't ship it.

Q. They have been able to get a sufficient number for the shipment of the limited amount for that industry alone? A. Yes.

C. P. Beistle.

By Gen. Appr. Brown:

Q. What is the proportion, from your experience on this subject, of shipments in tank cars impregnated with sulphuric acid and shipments in carboys without sulphuric; roughly, what is the proportion? A. You see, there isn't much shipment of it at all with the small amount of sulphuric in it; I don't believe that—it is only since the war; before the war there was no such movement, as far as I ever heard of it, and I couldn't tell you what, what would be the volume of the traffic because the conditions have changed so rapidly I haven't——

Q. You think only a small quantity is shipped in tank cars? A. Of this particular kind of mixture of acid; that is, of the lower strength, the high nitrate mixture——

Q. No; I mean just considering nitric acid as a whole. A. Oh, the greater portion is shipped as mixed acid; no doubt about that.

Q. More than 50 per cent? A. Oh, I should say more than 50 per cent; yes.

Q. More than 60 per cent? A. Yes; I should think about three-quarters of the nitric acid that is shipped is shipped in tank cars mixed with sulphuric acid.

Q. Of course, it has to be mixed with——

Gen. Appr. McClelland. What about the other quarter? A. The other quarter has to be shipped, most all of it, in carboys.

By Gen. Appr. Brown:

Q. In carboys, in glass; now, then, returning to the high grade nitric acid, nitric acid of a high strength, similar to the kind shipped here, what proportion of that is shipped in tank cars and what proportion in carboys? A. Well, the proportion of that shipped in carboys is negligible.

Q. It is nearly all shipped in tank cars? A. Yes; because the regulations require that the carboys have steel containers around them, and that carboy is so expensive and hard to get there is very little movement of it.

Q. The regulations require steel containers? A. When it is above 1.43 gravity.

Q. And only glass carboys when it is less than 1.43 gravity? A. Yes.

By Gen. Appr. McClelland:

Q. What did you have in mind in the way of a mixture when you said 25 per cent of it was shipped in carboys? A. Well, the question just such as that of the Aetna Company's came up from some of these explosive people that had to move nitric acid from one plant to the other, and they inquired as to the least amount of sulphuric acid that would go into it to protect the tank cars——

Q. No; Judge Brown asked you about the percentage that was

shipped in tank cars, and you said about 75 per cent, and then—A. That is, of all nitric acid made.

Q. As to the other 25 per cent you said it was shipped in glass. Now, what percentage of mixture did you have in mind that were shipped in the carboys? A. Well, it isn't mixed acid in the carboys; it is straight nitric acid in the carboys.

Q. In the 25 per cent? A. Yes. And that is just a guess.

Q. It is as close, approximately, as you can make it? A. Yes; possibly less than 25 per cent.

By Mr. Pratt:

Q. In other words, Mr. Beistle, whenever nitric acid is shipped in carboys it is shipped without the admixture of sulphuric? A. Practically. There are cases, small shipments of mixed acid in carboys for experimental and analytical purposes, that is provided for in the regulations, but they are negligible in quantity.

Q. In commercial use it is always shipped in glass without sulphuric acid mixed, in carboys? A. That is right.

By Gen. Appr. McClelland:

Q. The 25 per cent of the aggregate movement of nitric acid would be a very large quantity? A. Yes; it is a large quantity; I have seen as many as fifty cars in one freight yard of nitric acid in carboys.

By Mr. Pratt:

Q. Nitric acid in carboys? A. Yes, sir.

Q. There are two kinds of carboys, aren't there—one glass carboy in a wooden latticework case and one which must always be put inside of a steel tank? A. There is just one kind of carboy, but two kinds of packing.

Q. And it is only in the latter kind of packing, in a steel tank, in which nitric acid of 1.43 specific gravity or over can be shipped? A. That is right.

Q. Have you ever seen any such carboys? A. Yes; a few.

Q. How many? A. I think I saw fifty of them one day.

Q. That is the greatest number? A. I don't think there are over 100 in existence of that type of carboy.

Q. In which you can ship nitric acid of over 1.43 specific gravity? A. Yes.

Q. You think there are not over 100 in existence? A. Yes.

Q. I suppose there is also an extensive use for sulphuric acid alone without nitric? A. Yes.

Q. Considerably more than for the nitric acid alone? A. Yes, sir.

Q. In fact, the use of nitric acid alone is rather negligible in comparison with its use in combination with sulphuric acid, isn't it, rather small rather? A. It is a smaller portion; it is not negligible.

Q. Negligible is too strong; it is rather small.

By Gen. Appr. McClelland:

Q. Suppose that this mixture that we have here had been manufactured in this country instead of in Canada, and supposing the two—taking the nitric acid by itself; it would have had to be mixed substantially as it is in the importation, before it could have been used in this country; wouldn't it? A. Well, you can't—they would never use nitric acid, that is a mixed acid of that proportion just that way, as far as my knowledge of industries goes, there is no process which would require a mixed acid of that composition. All acid mixtures require much more sulphuric than that.

By Mr. Pratt:

Q. One more question, isn't it also true that most of the nitric acid produced in this country is used right where it is produced? A. Yes; the bulk of it is used right where it is produced. The usual practice is to have a nitric plant on the same location as an explosive plant, or where there is a large dye or color industry they make it right there.

Q. To avoid transportation, and use it as an ingredient in the final product? A. Yes.

Mr. Pratt. That is all.

By Mr. Lawrence:

Q. Mr. Beistle, in the discussion concerning the use of carboys, did you mean to imply that the use of glass carboys had diminished during the last five years, or simply that the volume of acids or movement in acids had increased? A. The volume of carboy shipments has not diminished, but the relative proportion of acids shipped in carboys, I think, has decreased. There is no doubt the carboy movement is much greater now than it was before the war, but also the total acid movement is much greater.

Q. How much greater would you say the acid movement is to-day over what it was in October, 1913? A. I couldn't say how much greater output there is, because the greatest amount of sulphuric acid isn't shipped at all; it is made and used on the same plant, but I expect there is 100 fold more freightage now than what there was in 1914, fifty fold anyhow.

Q. From that basis then it is reasonable——

Mr. Pratt. You said sulphuric; you meant nitric acid. A. I thought I said acids generally.

Q. Has the importation of nitric acid increased greatly in the last five years? A. I don't know anything about whether there has ever been much importation of nitric acid; my experience wouldn't cover whether it was imported or not.

Q. But you know the manufacture of it has tripled and quad-

rupled, probably? A. Four times as much. Oh, I should think so at least.

Q. Then, is it a reasonable assumption that in 1913, that was before the war, that the glass carboys could have reasonably accommodated the importations of nitric acid? A. Oh, if there was any import movement at that time, why I don't think there would have been any difficulty to get carboys for it. Of course, the same regulations with respect to what kind of nitric acid went into carboys were in effect then as they are now.

By Mr. Pratt:

Q. I gather from what you say that the tremendous increase in the output of acids for use in nitrating plants has compelled the shippers to utilize every practical means of transporting them? A. Well, of course, there is only one practical means of transporting strong nitric acid; that is, to mix it with a sufficient amount of sulphuric acid and ship it in tank cars or drums.

By Mr. Lawrence:

Q. And when you mix it with 20 per cent sulphuric acid it is no longer nitric acid per se, is it? A. No; it is not nitric acid alone.

Q. It is a mixture of nitric and sulphuric acid? A. Yes.

Q. Is that a chemical or mechanical mixture? A. Well, that is just a mechanical mixture.

Mr. Lawrence. That is all.

By Mr. Pratt:

Q. In the light of the knowledge which you as chief chemist of the Bureau of Explosives had in the fall of 1917, is the percentage which was here used, twenty per cent, as small a percentage of sulphuric acid as could have with safety to the cars been used in the transportation of this nitric acid? A. Yes; that is even under the limit I had in mind at that time.

Q. What was the limit you would have recommended at that time? A. 25 per cent.

Q. It is true, is it not, that nitric acid of a specific gravity of 1.4904, could not have been shipped in any form of container except a glass bottle of seven pounds capacity? A. Yes; that is the fact.

Q. Unless mixed with sulphuric acid? A. Yes.

By Mr. Lawrence:

Q. Do the same rules apply to intrastate shipments as interstate? A. Practically speaking, they do, because intrastate shipments are shipped on the same—in the same cars and in the same trains as interstate shipments—and it has been the general opinion of the courts, I believe, that these regulations apply to all shipments intra-

state and interstate, and the railroads insist on these regulations regardless of whether it is interstate or intrastate.

Q. You mean to say these regulations of the Interstate Commerce Commission regulate intrastate commerce? A. That is the understanding I have because they are handled in the same cars and trains with interstate commerce. You see these rules are primarily not to protect the commodity itself but to protect the carrier.

Mr. Lawrence. I think that is all.

By Mr. Pratt:

Q. They are adopted by the American Railway Association, aren't they? A. Yes, they are adopted by the American Railway Association.

Q. Which contains in its membership all the railroads in the country? A. Yes.

Q. Interstate and intrastate? A. Yes.

Mr. Lawrence. I am not so sure at this time that the Government will wish to introduce any testimony. The facts which have developed in the case, I am inclined to think, have been pretty complete, but I am not prepared to submit at this time. One of my witnesses, Dr. Pickerell, is ill with influenza or grippe, and I am not sure when he will be able to be here.

Gen. Appr. McClelland. We will adjourn tentatively until two o'clock Monday afternoon, and if Dr. Pickerell is not able to be present you will notify Mr. Pratt, and in that event we will set the case for October 14th at 10.30 a. m.

BOARD OF U. S. GENERAL APPRAISERS.

In the Matter of Protests Nos. 850017, 850018, 850184, 850230, 850237, 850375, 850821, and 850822 of THE AETNA EXPLOSIVES COMPANY.

BEFORE BOARD 1.

Present:

General Appraiser MCCLELLAND.
General Appraiser SULLIVAN.
General Appraiser BROWN.

NEW YORK, N. Y., *October 14, 1918.*

Appearances:

Winthrop & Stimson, by A. S. Pratt, Esq., and George Roberts, Esq., of counsel for the protestants.

Bert Hanson, Esq., Assistant Attorney General, and Charles D. Lawrence, Esq., special attorney, for the United States.

Mr. Pratt. If your honors please, I had another witness but I couldn't get him today, so I told Mr. Lawrence this morning I would rest my case. He has some witnesses to call and if we wish to call him after he has finished with his case I would ask the Board to grant us an adjournment.

Mr. Lawrence. Of course that would be only for rebuttal. Do you rest now?

Mr. Pratt. We rest.

Mr. Lawrence. I would like to recall Mr. Wollenberg for two questions.

Mr. Pratt. Further cross-examination?

Mr. Lawrence. Yes, sir.

Mr. Pratt. After I have rested you could hardly do that.

Mr. Lawrence. He is not my witness: I simply wish to ask him two questions on further cross-examination.

Mr. Pratt. If I hadn't rested it would be all right. Of course I don't want to be technical in these things, but Mr. Lawrence just tried to limit me to rebuttal.

Mr. Lawrence. Well, let these questions be put in his previous testimony before your motion is registered, or rather your submission was made.

Mr. Pratt. Well, let us have it understood then that this witness, if I call him, needn't be limited strictly to rebuttal; with that understanding I have no objection.

Gen. Appr. McClelland. We are not very strict about these rules.

Mr. Lawrence. Well, my idea was if you rested you were limited to rebuttal proof.

Mr. Pratt. If neither of us are going to be technical what difference does it make. Go ahead and continue your cross-examination of Mr. Wollenberg.

Gen. Appr. McClelland. We are not strict about that. I think it would be hard to draw the exact line on direct and rebuttal.

H. L. WOLLENBERG, recalled for further cross-examination, having been previously sworn, testified as follows:

By Mr. Lawrence:

Q. Mr. Wollenberg, in your testimony the other day you testified, I believe, that it was necessary to mix certain percentages of sulphuric with nitric acid in order to conform to the Interstate Commerce Commission regulations; is that right? A. I do not understand your question; will you please repeat it?

Last question repeated by the reporter.

A. That statement is not correct unless you qualify it.

Q. Well, with what qualification? A. The necessity for mixing sulphuric acid with nitric acid would occur if it were necessary to ship nitric acid of such strength that its shipment—and in such quantity—in such strength and in such quantity that its shipment would not be permitted under the Interstate Commerce Commission regulations.

Q. Well, what regulations did you have in mind; what particular regulation? A. I do not recall the exact numbers, but the regulations prohibiting the, or, rather, regulating the manner of shipment of nitric acid.

Q. Well, if you had the regulations before you could you point to the one you had in mind? A. I think so.

Q. Please look at Exhibit 2 and point out the regulation. A. Sections 1857—rather, section 1857—is on the transportation of nitric acid.

Q. Yes; that is the one you had in mind, is it? A. That is the one I had in mind.

Q. Now, you also testified to the specific gravity of the nitric acid in this mixture; how did you arrive at that specific gravity? A. My testimony was with respect to the specific gravity of the nitric acid which went into these shipments, and was based on certain assumptions which I stated at that time.

Q. Well, is there anything in the data in Exhibit 1 from which you can determine the specific gravity of either of the acids? A. There is not unless there is some additional data with it.

Q. Please look at it. A. I am familiar with it.

Q. Please look at it. A. This sheet exhibits the final composition———

Q. Sir? A. This sheet exhibits the final composition of the acids as shipped, and it doesn't give the complete information as to the components that may have entered into it.

Q. Have you any other data concerning these shipments than what appears in Exhibit 1? A. Well, I have knowledge that the nitric acid produced was mixed with oleum of a strength of 104.5 per cent.

Q. How do you know that was the strength of the oleum? A. That was the strength of the oleum which was purchased and entered

into this plant, and therefore it is my belief that it was used, since those were the instructions given to the plant.

Q. And from what do you deduce the specific gravity of the nitric acid? A. From the composition set forth in this sheet, together with the fact that oleum was used—oleum of a certain strength—was used in the mixture.

Q. How does it follow that if the specific gravity of the oleum was of a certain degree that the nitric acid would be of the strength that you specified, or the specific gravity that you specified? A. Well, there are two things being mixed here to give a certain result. Now, if you know the result and you know the full data regarding one of the things going into it you can calculate the other, assuming no substantial loss and that sort of thing.

Q. Well, just tell us specifically how you ascertain that the nitric acid was, as you say, of a specific gravity of 1.4904? A. I read into the record before a full detail of the calculation, but I will be glad to repeat it if you like.

Q. Let me ask you what was that calculation based upon? A. It was based upon the composition set forth here, and the further fact that oleum was used with the nitric acid to give this final composition.

Q. That is, assuming that the oleum was of a strength of 104.5? A. 104.5 per cent.

Q. Does it necessarily follow that nitric acid combined with it must be of a specific gravity of 1.4904. A. It does to give this final composition that was stated here, unless you assume losses in the operation and other things happening.

Q. If that is necessary to produce the combination as shown upon schedule one, why can't you, by taking schedule one, work back and find the specific gravity? A. I did take schedule one and work back to find the specific gravity.

Q. Well, take schedule one: how do you work back? A. Do you mean in detail?

Q. Have you already testified in detail what you are saying now? A. I believe I have; yes.

Q. You have the schedule before you, Exhibit 1? A. Yes.

Q. Now, the fifth item, in which the percentage of sulphuric acid is given as 17.66 and the nitric acid 4.42——

Mr. Pratt. That is the value.

Q. Strike that out—4.42, 74.73—from those figures can you ascertain the specific gravity, knowing—assuming—that the oleum is 104.5? A. Yes; I could.

Q. How? A. By a calculation exactly analagous to my previous calculation, which was for the average composition.

Q. So that when you stated that the specific gravity of the nitric was 1.4904, you were basing it on the average figures given here? A. I was; and I think I very clearly stated so.

W. L. Wollenberg.

Q. But take that fifth item to which I called your attention, what would be the specific gravity in that case of the nitric acid? A. Well, I would have to make the calculation in order to answer that.

Q. Yes, please. A. Do you want me to take the time?

Q. Will it take long? A. It will take a few minutes.

Q. Do you want some paper? A. Thank you. (Calculates.) I find I haven't got here a complete table of specific gravity compared to percentages, which I need for my final calculation in this thing; if you can——

Q. Well, in the absence—— A. I can give you my figures roughly, though, by interpolation.

Q. In the absence of the necessary data, tell us just how you would proceed on the figures I gave you to find the specific gravity of the nitric acid? A. Why, in the analysis to which you referred there is 17.63 per cent H_2SO_4. If that amount of H_2SO_4 were added in the form of 104.5 per cent oleum it would represent only 16.99 per cent as oleum. Therefore the difference between those two figures, or .76, represents the so to speak water absorbing capacity of the oleum used. Therefore there was present with the nitric acid, in addition to the water which appears in the final result and which is stated in the data sheet, or which is found from the data sheet to be 7.61, there is to be added to that this .76 represented by water absorbed by the oleum, giving a total amount of water of 8.37, which was present with the original nitric acid. Now, the nitric that is present is 74.73, and that with 8.37 per cent water gives the data for calculating the strength of the original nitric acid, which I find to be 89.93. Now, the specific gravity corresponding to that is something more than 1.491, but I haven't got the tabulated data to read off the specific gravity corresponding to that percentage.

Q. Well—— A. Also, I haven't checked the numerical work of this calculation, which I would prefer to do before having the record stand.

Q. Take the tenth item on that schedule one, Exhibit 1, where the percentage of nitric acid is given as 68.77 and the sulphuric acid as 21.77, would you expect to find the same specific gravity of the nitric acid in that case as in the other? A. Oh, no; it will be different in each case.

Q. Higher or lower? A. Well, in general the less water that there appears to be in the final composition the higher the specific gravity nitric acid would have been used in making that final composition.

Q. Well, if you found 1.4904 to be the specific gravity of the nitric as the average stated here, it necessarily follows, does it not, that some of the shipments there were a less specific gravity? A. Than 1.4904? That is correct.

Mr. Lawrence. That is all.

By Mr. Pratt:

Q. Mr. Wollenberg, I take it that you didn't give the plant instructions to add sulphuric to the nitric, to add every time an exactly definite amount, did you? A. No.

Q. Your idea was to add an approximate amount which would make it safe to transport the nitric in tank cars? A. Exactly.

Q. And that was all? A. Exactly.

Q. It didn't make any difference whether it was exactly 20 per cent sulphuric acid by weight or 18 or 22 per cent? A. No; and—no; and even with a wider latitude than that.

Q. But what I mean is you simply, in order to put the nitric acid in condition to ship in large quantities, you simply gave instructions which should be approximately followed? A. That is correct.

Q. Not exactly followed? A. That is correct.

By Mr. Lawrence:

Q. What would be the variation in the specific gravity of these items here in order to get an average of 1.4904? A. Well, I do not know what it would be in those items without calculating it, but from the instructions given to the plant and the conditions surrounding the operation they would have complied with the intent in the matter had there been a variation of, well, I should say within a total range of ten per cent in the sulphuric acid content.

Q. Would the variation in the specific gravity of the nitric have been one-half—let us say fifty-one hundredths of a per cent—would there be that variation? A. You don't mean fifty one-hundredths of a per cent, do you?

Q. I will withdraw that question. Between what range of specific gravity would the nitric acid run in order to get an average of 1.4904? A. Why, it could go within any range and still get that average.

Q. I mean what was the range in these cases, do you think? A. I would have to calculate it to see. I have to take the lowest and the highest cars, so to speak, to tell you what the range was in these particular shipments.

Q. Well, what figures would show the low range in that tabulation—Exhibit 1? A. Well, there are two variables in the thing; one is the amount of sulphuric acid and the other is the amount of water, and I wouldn't undertake to pick out the low and high cars without making some calculations, because there are two variables, you see.

Q. And are you prepared to say whether any of the nitric used was of a specific gravity of not more than 1.49? A. Why, some of it was more than 1.49.

Q. Are you prepared to say that some of it was not more than 1.49? A. No; I am not prepared to say that some of it was not more. I say definitely that some was more.

Q. But wasn't some of it necessarily less in order to get that average? A. Certainly it was.

Q. It is reasonable to say that some of it was of a greater specific gravity than 1.49? A. I don't want to make any guess on that without calculating it.

Q. Well, is it possible for anyone to calculate that on the detailed figures and description you have given? A. Certainly it is.

Q. It is? A. Yes, sir.

Q. What did you mean when you said there might be a variation of ten per cent in the sulphuric acid used? A. I meant that they might ship a car containing as little as 15 per cent sulphuric acid or as much as 25 per cent sulphuric acid and still make it safe for transportation if the water content of those particular cars was in correspondence with the lesser or greater amount of sulphuric.

Q. You are not prepared to say then without making a detailed analysis of each of the shipments here whether some of them may have—some of the nitric acid may have a specific gravity not over 1.49? A. No; I am not prepared to say that without making a calculation.

Mr. Lawrence. All right.
Mr. Pratt. That is all.

ERNEST C. KLIPSTEIN, called as a witness on behalf of the United States, having been duly sworn, testified as follows:

By Mr. Lawrence:

Q. Mr. Klipstein, are you a member of the firm of A. Klipstein & Company? A. I am treasurer.

Q. Doing business where? A. 644 Greenwich Street.

Q. What is the business of your firm? A. Chemicals.

Q. How long have you been in the business? A. Since 1876.

Q. Do you manufacture nitric acid? A. No; we don't manufacture anything.

Q. Do you use nitric acid in any of your products? A. Not A. Klipstein & Company, they simply buy and sell.

Q. You buy and sell nitric acid? A. Yes.

Q. Do you buy and sell sulphuric acid? A. Yes.

Q. Did you buy and sell those products at and prior to October, 1913? A. Yes.

Q. Do you know what the trade at that time understood by the term nitric acid? A. Yes.

Q. What was it? A. Well, it was—nitric acid was always known to be as free as possible from either sulphuric acid or hydrochloric.

Q. Whenever sulphuric acid or hydrochloric acid were present were they there through accidental results or had they been deliberately added? A. They were there through accidental results.

Q. They were accidental results? A. That is to say they use

either sulphuric acid or muriatic acid in order to decompose nitrate of soda to obtain nitric acid, and some of it was carried over unintentionally.

Q. What was the trade understanding of the term sulphuric acid at and prior to October 3, 1913? A. Well, that was—sulphuric acid was supposed to contain as little water as possible, and it was started in—that is in the manufacture, somewhere around 60 and has to be carried up higher for different purposes.

Q. Are you familiar with nitric acid by itself; I mean familiar with the uses of nitric acid by itself? A. I never used any by itself personally, but we have simply sold it.

Q. Having in mind the trade understanding of the term nitric acid at and prior to October 3, 1913, would a mixture of twenty per cent sulphuric acid and seventy per cent nitric acid have been a good delivery on an order for nitric acid? A. I wouldn't have accepted it as a dealer.

Q. Would such a mixture have been a good delivery for sulphuric acid? A. No.

Q. Having reference to the commercial nitric acid concerning which you have testified what was the range of impurities which might be present in commercial nitric acid? A. Well, I couldn't say exactly from memory.

Q. Well, could you say from memory whether it was over or under one per cent? A. I wouldn't like to say one or the other.

Mr. Lawrence. I see; that is all.

By Mr. Pratt:

Q. Mr. Klipstein, you say that nitric acid was understood in the trade at and prior to 1913 as meaning that it must be as free as possible from sulphuric acid? A. Yes.

Q. Or hydrochloric acid, that is what I understood you to say, is that right? A. Yes.

Q. By that did you mean anhydrous nitric acid? A. No: that is a different thing altogether; that is free from water.

Q. What did you refer to, to the ordinary nitric acid that is sold and handled in commerce? A. Yes.

Q. That always contains some water? A. Yes; water is not considered an impurity in the sense that sulphuric or hydrochloric acid would be.

Q. Well, then, as I understand you, you mean to say that all nitric acid as sold, generally sold and delivered in the commerce of this country at and prior to 1913 contained a greater or less per cent of water? A. Yes.

Q. What percentage of water did it contain? A. That I couldn't answer: I am not a chemist.

Q. Wouldn't the percentage of water have anything to do with the value of the nitric acid? A. It had to do with the value: yes.

Q. Was it sold as nitric acid regardless of the percentage of water it contained? A. Ordinarily in the small trade there was an average percentage stated by the salesman.

Q. Then, when you bought and sold it, you stated you wanted nitric acid of a certain strength, didn't you? A. We stated we wanted to know what the strength was so as to know how to bill it; it was usually sold at absolute strength nitric.

Q. I understand you mean nitric acid was usually bought and sold on its absolute strength of HNO_3? A. Yes.

Q. So that the description of nitric acid would be, we will say, for example, 80 per cent nitric or 60 per cent nitric? A. Yes.

Q. Meaning that the balance of 20 per cent or 40 per cent is water? A. Yes.

Q. And if it contained any sulphuric acid, I understand you to say, it would not be known as nitric acid? A. No; I didn't say it wouldn't be known as nitric acid, but people that wanted to use nitric acid as nitric acid always wanted it as free as possible from the other two acids.

Q. That was because they wanted to use nitric acid as nitric acid? A. As nitric.

Q. But isn't it true that in nitric there is always some sulphuric acid? A. Well, I believe it is true that there is a trace of it always.

Q. And that always there is some—— A. It is almost impossible to free it absolutely.

Q. And there is also certain other impurities, certain oxides, aren't there? A. Well, there might be, I suppose; I can't testify as a chemist.

Q. You are not a chemist yourself? A. No.

Q. You simply deal in chemicals? A. Simply deal in chemicals; in another capacity I use nitric and sulphuric acid.

Q. But what I mean is you have no chemical education. A. Yes.

By Gen. Appr. Brown:

Q. Are you a trade chemist enough to know the reason that there is always some sulphuric acid present in nitric? A. Well, the reason for that, I have always understood, is because in the process of obtaining nitric acid, nitrate of sodium is mixed with sulphuric acid——

Q. And some of the sulphuric gets in? A. That is, after it is made the sulphuric acid is distilled off and some of the sulphuric acid is carried over. That is what they tell me; I don't know anything about that as a chemist.

By Mr. Pratt:

Q. You don't know personally; you never made it yourself? A. No.

Q. What strength nitric acid do you deal in? A. We deal in any strength that—I don't remember, I am not enough of a chemist

to testify; I could tell you from a book what strengths I have known and have them written down, but I can't tell you right offhand, because I don't claim to be a chemist.

Q. Did you ever buy and sell any nitric acid containing—or what is known as 80 per cent nitric? A. No.

Q. Or 60 per cent nitric? A. No; I never did. I buy, as a manufacturer I buy nitric combined with sulphuric acid for two or three different purposes.

Q. You buy nitric combined with sulphuric acid? A. Yes; but that is for a special purposes.

Q. But what I asked you was whether you hadn't bought 80 per cent nitric acid, which I understand means nitric 80 per cent HNO_3 and 20 per cent water? A. Yes; that is what it would be.

Q. Have you ever bought or sold that strength nitric acid? A. No; I don't think so.

Q. What strength have you bought and sold of nitric? A. I couldn't answer that without referring to my bills, really.

Q. So you have no recollection of what character nitric acid it is you deal in? A. As I say I am not a chemist and I don't know the exact strength.

Q. You simply know you have bought nitric acid, and the strength you have no recollection of? A. I know we wouldn't buy ordinarily—for instance, I am inclined to think the nitric acid must be at least 90 to 95 per cent pure before it could be sold as nitric acid.

Q. 90 per cent nitric and ten per cent water? A. The balance water. I am not sure of those figures, either.

By Gen. Appr. McClelland:

Q. Why did you buy the combination nitric acid and sulphuric acid rather than buy the nitric acid by itself? A. Well, I bought and I am still buying it, and the way we buy is this: We want two strengths of acid, in the first nitration we want one strength and in the second nitration we want another strength. The first nitration can contain more sulphuric acid than the second, and we want more nitric acid in the second. The reason for the use of the sulphuric acid, as I understand, is simply to absorb the water; it has no action, positive action, whatever in the special purpose for which we use it. We buy and we pay for each acid separately and it is tabulated and billed to us separately, and our chemist insists that the first thing shall contain so much of each acid and the second so much. And when we get through with it we pipe the sulphuric acid weakened down by the water it has absorbed from the reaction back to the plant where it is remade, at least the water is evaporated out.

Q. If you bought the two separately you would have to combine them before you manufacture? A. Yes.

Q. So it is an advantage to you to get the combination in your processes? A. For instance, I am right alongside of the works and they pipe it right through to us and we never see the acid at all.

Q. And it saves you the trouble of combining it? A. Yes.

Ernest C. Klipstein.

By Mr. Pratt:

Q. When you buy this combination you buy certain definite proportions of nitric and sulphuric acid? A. Yes, our chemist insists it shall be.

Q. What are those proportions? A. I couldn't tell you without referring to the bills.

Q. You have no recollection whatever? A. No, I haven't.

Q Where is your plant, Mr. Klipstein? A. Chrome, New Jersey.

Q. That is next to what other plant? A. The Crome Fertilizer Works.

Q. That is where this nitric and sulphuric acid is produced? A. Yes.

Q. And piped over to your plant? A. Yes.

Q. And what you buy from them you use in exactly the same proportions in which it is bought and delivered? A. Exactly.

Q. So you buy a certain definite percentage of nitric and sulphuric acid? A. As I understand it that is determined by the purpose which requires a given mixture.

Q. That is for the purpose in your case of manufacturing this dinitro chlorbenzol? A. Yes.

Q. What are your purchases of nitric, what do they amount to, I do not mean nitric and sulphuric, I mean nitric? A. I would have to look that up, I can just refer to the books and tell you exactly.

Q. But can you tell me approximately now? A. Well, we use sufficient—I can tell you this much, we use sufficient to nitrate, I think it is about 1,000 or 1,500 pounds of chlorbenzod a day.

Q. How much nitric would that take? A. I couldn't tell you that without referring to my books.

Q. Do you buy nitric and sell it, or rather do you buy nitric for any other purpose than to use in nitrating chlorbenzol? A. The concern A. Klipstein & Company does, I am speaking of another concern altogether, another company I am in.

Q. Then in this last question you meant you bought just enough to nitrate the quantity you gave of chlorbenzol? A. Yes.

Q. Then in addition to that you do buy and sell nitric? A. Nitric acid.

Q. As a broker? A. As a dealer, A. Klipstein & Company.

Q. Now, what are your purchases of nitric acid in that capacity? A. They do not amount to very much, we do very little in it.

Q. Well, what do you call very little? A. Not fifty tons a year.

Mr. Pratt. That is all.

Mr. Lawrence. Mr. Klipstein, when you buy nitric acid mixed with sulphuric acid what do you call that mixture? A. Well, we call it mixed acid.

Q. Mr. Klipstein, you say you call it mixed acid, is that all you call it, simply mixed acid? A. It is known as mixed acid.

Q. Well, don't you have to add to it the percentages of one and

the other? A. Well, we buy mixed acid as I told you for two different purposes, according to whether it is first or second nitration.

Q. And do you call both mixed acid. A. We call both mixed acid.

Q. Without any further designation? A. Without any further designation.

Q. How does the plant from which you buy the combinations know what strength to give? A. Because we tell them.

Q. Then you do tell them the strength? A. They do at the plant.

Q. Then when you buy it you say you want mixed acid having a certain percentage of nitric acid and a certain percentage of sulphuric acid? A. We have been doing this for several years and they know just as well as we do what proportion is needed for the first and second nitration.

Q. What do you order for the first nitration? A. It is a larger proportion of sulphuric acid than the second.

Q. What are the proportions? A. I can't tell you that.

Q. But when you started to do business with this concern you told them what percentages you wanted? A. The chemist told them that.

Q. I mean your company?. A. Yes, told them axactly what they wanted. Sometimes that makes trouble if they don't give us the proper mixture, that makes trouble, so our chemist says.

Q. And you have continued to do business this way for several years? A. Oh, about three years.

Q. So now when you say for the first process or for the second process they know without further explanation just what percentages you want? A. Yes.

Q. And you say you have cause for complaint, they have not furnished the exact quantity? A. We have complaint about the final product it does not come up to test and our chemist will say that is because they didn't give us just the right proportions of acid.

By Mr. Lawrence:

Q. Have you been buying nitric acid continually since 1876? A. Yes, just as it comes up in the trade, not in a very large way, once in a while a customer will want ten carboys of nitric acid and we can get it for them.

Q. Has the trade understanding of nitric acid been the same throughout your experience? A. Just about, yes.

Mr. Lawrence. That is all.

* * * * * * * *

EUGENE WAUGH, called as a witness on behalf of the United States, having been duly sworn, testified as follows:

By Mr. Lawrence:

Q. Mr. Waugh, what firm do you represent? A. The Waugh Chemical Company at present.

Eugene Waugh.

Q. Doing business where? A. Two Rector Street.
Q. How long have you been in this business of chemicals? A. Since 1887.
Q. Do you buy and sell chemicals? A. At the present time.
Q. Are you familiar with nitric acid? A. Somewhat; yes, sir.
Q. How long have you been familiar with it? A. Since 1887.
Q. In a commercial way? A. Well, in a manufacturing way.
Q. And have you bought and sold it in wholesale quantities? A. Yes; regularly.
Q. For how many years? A. Since 1887.
Q. Have you bought and sold sulphuric acid during the same period? A. Yes, sir.
Q. And certain other acids, too? (No audible answer.)
Q. And were you familiar with the article known—what was the article known in the trade at and prior to October 3, 1913, as nitric acid? A. Commercial nitric acid?
Q. Yes. A. In strengths running from 30 degrees Baumé to 42.
Q. Well, what do you mean by Baumé strength, Mr. Waugh. A. The table—everything is sold on specific gravity and Baumé strength, percentage of HNO_3, according to the manufacturers' chemists' table.
Q. Is that a chemically pure product? A. No, sir.
Q. Was any of it chemically pure? A. No, sir.
Q. What impurities, if any, were in it? A. Iron, sulphurous or sulphuric acid, and hydrochloric acid.
Q. Well, in what percentages would these impurities be present as far as you know? A. You mean the maximum or the minimum?
Q. The maximum and the minimum? A. I never would buy and never did buy any that contained over one-half of one per cent sulphur; we wouldn't consider that as nitric acid.
Q. Was that there accidentally or deliberaely added? A. Through manufacturing processes.
Q. Did you hear Mr. Klipstein explain the accidental way in which chlorine gas or sulphuric acid might be present? A. Yes, sir.
Q. And is that also your understanding of the way those impurities get in the nitric acid? A. Why, they came through the decomposition of nitrate of sodium and the distillation of the resultant product.
Q. What was the trade understanding of the term sulphuric acid at and prior to October 3, 1913? A. Sulphuric acid as a commercial trade term was 66 Baumé, 92 per cent H_2SO_4.
Q. Free from impurities? A. Free from impurities, depending on the material from which it was made, pyrites or brimstone.
Q. Nitric acid, as I understood you to say, as known in the trade, contains not over what percentage of impurities? A. Not over one-half of one per cent of sulphuric acid, as low as possible in the other impurities.

Mr. Lawrence. Thank you.

By Mr. Pratt:

Q. Mr. Waugh, this nitric acid that was bought and sold in the trade prior to 1913 and since then, I take it, wasn't anhydrous nitric acid, was it? A. There has been anhydrous nitric acid sold during that period, but not for commercial use.

Q. Not for commercial uses? A. No. The highest strength required in commerce is 42, and from that downwards, in ordinary manufacturing—consuming manufacturers.

Q. 42 Baumé? A. 42 Baumé.

Q. What does that mean with reference to the percentage of water? A. Well, 42 Baumé nitric acid would contain about 67 per cent of HNO_3 and the balance would be water.

Q. And impurities? A. And impurities.

Q. And 36 degree Baumé, what would that be? A. I don't recall just what it would correspond to.

Q. But I am not much of a chemist; can't you tell me your recollection of what that would be? A. 36 would be, I should say roughly, 56 per cent of HNO_3.

Q. And the balance water? A. And the balance water.

Q. So, then, commercial nitric acid would range between those two limits, and sulphuric acid has no limits, I understand? A. It is sold commercially from 60 up to 66 Baumé.

Q. And that means with reference to the percentage of water what? A. 66 would be 93 per cent of H_2SO_4, and the balance water and impurities.

Q. What would the other limit be? A. 67.

Q. I mean with reference to water? A. The same water and impurities.

Q. You mean 67 per cent H_2SO_4? A. Yes, sir.

Q. And the balance water and other impurities? A. Yes, sir.

Q. Mr. Waugh, I understood you as well as having been a dealer in acids you have been a manufacturer? A. Yes, sir.

Q. For what company? A. Highlands Chemical Company, Putnam County Chemical Works.

Q. For how long a period did you manufacture nitric acid; how many years? A. Fourteen—fifteen years.

Q. Now, in the manufacture of nitric acid what per cent did you get, or what per cent strength, or what degree Baumé? A. We only manufactured certain strengths: 42 was the highest strength we made; that was commercial acid.

Q. That was the highest strength nitric you made? In our processes; yes.

Q. That contained how much water, may I ask again? A. 67 per cent, I think it is.

Q. 67 per cent nitric? A. 67 point, 13 or 18 per cent of nitric, HNO_3.

Q. And the balance water, which would be about 33 water? (No audible answer.)

Q. That was the highest strength nitric acid which you say you manufactured? A. At that time.

Q. At that time. A. That was all the requirements of the trade at that time.

Q. When you say that time, that period of time, what do you mean? A. Up to 1901 or 1902.

Q. Have the requirements of the trade changed since then? A. To a very large extent; yes; they require stronger acids.

Q. What has brought about those changes? A. The manufacture of explosives such as trinitrotoluol and various other explosive chemicals.

Q. And the manufacture of explosives, I understand, requires a nitric acid of higher strength than 42 Baumé? A. Yes, sir.

Q. What strength does it require? A. I guess about as strong as they can get it.

Q. The stronger the better? A. 80 or 85 per cent nitric acid.

Q. 85 per cent? A. 80 or 85 per cent.

Q. You mean 85 HNO_3? A. Yes.

Q. And higher if they can get it? A. Yes.

Q. In other words, the greater the strength of the nitric acid the more advantage it has in use in manufacturing explosives? A. For certain purposes; yes, sir.

Q. And that is something which has arisen, I take it, since the war? A. For certain explosives, yes; but there has always been a demand for a high strength nitric acid, such as for dynamite, which was made originally before the war.

Q. But the demand has greatly increased since the war? A. Yes, sir; very greatly.

Mr. Pratt. All right; that is all.

Mr. Lawrence. Mr. Waugh, you spoke of water being present in nitric acid. Is it not true that water is actually present in nearly all nitric acid? A. Yes.

Mr. Lawrence. That is all.

By Gen. Appr. McClelland:

Q. I wish you would explain just what you mean by commercial uses, the distinction between commercial uses and other uses? A. Well, in making—decomposing nitrate of soda with sulphuric acid in the first process you get your nitric acid, HNO_3, mixed with various other substances, among others peroxide of nitrogen, and this is known as aqua fortis to distinguish it from the commercial nitric acid. This ranges from light yellow to dark yellow. Then it is purified down by further distilling processes until it reaches the state of nitric acid, and that is used for a great many processes—fine coloring, pharmaceutical work, etc.

Q. And you call that for commercial uses? A. Commercial purposes; and the buyer always specifies what strength he desires, and if he doesn't specify you ask him what strength he requires, and other dealers who may require mixtures will specify the mixture they require, the percentage of nitric and sulphuric in a mixture, and the pay is based on those percentages.

By Gen. Appr. Brown:

Q. What is aqua fortis known as? A. Aqua fortis.

Q. Yes; but what is it? A. It is the first condensed gas of nitrate of soda and sulphuric acid decomposed by heat.

Q. Of what chemicals does it consist? A. Sulphuric acid and nitric acid.

Q. Well, in about what proportions? A. Sulphuric acid and nitrate of soda; that is the nitrate of soda is decomposed by a given quantity of sulphuric acid at a given strength and heat applied to it, and this is the first condensed gas from that distillation process.

Q. Then there is no HNO_3 in it at all? A. Oh, yes.

Q. You mean it is impure HNO_3? A. Yes.

Q. Containing nitrate of soda? A. Some nitrate of soda and sulphuric acid.

Q. Containing what impurities? Enumerate the impurities. A. Well, sulphuric acid.

Q. In what proportion, about? A. In aqua fortis, I couldn't tell you right offhand. The finished nitric acid would be practically free from sulphuric acid up to one-half of one per cent.

Q. Well, when it is practically free from sulphuric acid is it still aqua fortis? A. Then it is nitric acid.

Q. I am asking you about the aqua fortis. A. Aqua fortis may contain and does contain larger proportions of various impurities, which are taken out in the subsequent distilling processes in obtaining nitric acid.

Q. And you can't tell me, roughly, what those are? A. No; aqua fortis isn't a commercial article; it is very seldom sold.

Q. I didn't hear you. A. It is very seldom sold for general manufacturing purposes; they all buy nitric acid; color makers, for instance; they buy nitric acid. They won't buy aqua fortis because it always has too much of these impurities in it.

By Gen. Appr. McClelland:

Q. You have bought and sold nitric acid by itself, have you? A. Oh, yes; quite largely.

Q. You have bought and sold sulphuric acid? A. Yes, sir.

Q. Under those two names? A. Yes, sir.

Q. Now, have you bought the combination? A. Yes, sir.

Q. Of nitric acid and sulphuric acid? A. Yes, sir.

Q. Under what name is that bought and sold? A. Mixed acid.

By Mr. Lawrence:

Q. Has the trade understanding of the terms you have used been the same throughout your experience? A. Yes, sir.

Q. And you have been dealing in them in wholesale quantities for a great many years? A. Yes, sir.

Eugene Waugh.

By Mr. Pratt:

Q. You said you bought and sold nitric and sulphuric acids mixed under the name mixed acid, without any further qualification or designation? A. No, the party making an inquiry for mixed acid generally states the percentage of nitric and the percentage of sulphuric required in the mixture.

Q. In other words mixed acid unqualified has no definite commercial meaning? A. Not unless the percentage is specified of each acid.

Q. And did not have prior to 1913? A. No, sir.

By Gen. Appr. McClelland:

Q. Does it imply a mixture of any particular acids? A. No, just a mixture of the two acids in such proportions as are specified.

Q. Does it imply a mixture of those two acids— A. Yes, sir, it does.

Q. Nitric and sulphuric acid? A. Yes, sir, it does.

By Mr. Pratt:

Q. I understood when you were talking about commercial uses you did not then refer to uses in manufacturing explosives? A. No, not at all.

Q. That was a use considered by you separately from other commercial uses? A. We always class the explosive industry in a different line commercially from the ordinary commercial uses.

Mr. Lawrence. If the Board please, I expected to call two more witnesses, but one of them was called unexpectedly to Chicago on Government business and the other one is recuperating from illness.

Gen. Appr. McClelland. What?

Mr. Lawrence. The other one is recuperating from an illness and as the situation stands I can not proceed further at this time.

Mr. Pratt. Are you going to call Dr. Pickerell?

Mr. Lawrence. I was, he has recovered but is not here now. However, if counsel wishes to close I will close without asking further time.

Gen. Appr. McClelland. What do you say, Mr. Pratt?

Mr. Pratt. There is just one thing I would like to put in, that is the record in the Benzol Products case which was decided by your Board a couple of years ago. Aside from that I am willing to close.

Gen. Appr. McClelland. Is there objection?

Mr. Lawrence. I object to the admission of the record on the ground that it is immaterial.

Mr. Pratt. Why, I don't think it is, your honors, if I may be heard. I don't think it is immaterial, it seems to me it is quite material because the ground on which the merchandise

in that case was allowed free entry was that only enough sulphuric acid had been mixed with the nitric acid to enable it to be safely transported in tank cars, and that is exactly the position we take in our case. It is true in that case your honors found it was only three per cent by value while in our case it was a trifle over five per cent in value, but that depends of course on the fluctuating value of nitric and sulphuric acid in the market at that time and this time, but it might be helpful if I gave the values of nitric acid and sulphuric acid in the market in December when this entry was made and in December, 1914.

Gen. Appr. McClelland. There was a subsequent decision by the Board.

Mr. Pratt. There was a subsequent decision in the Nonnalo case. In that case the percentage was found to be 45 and 45. The testimony showed that it was imported in that particular percentage to be used in that combination by the importer in his plant. I might add, too, I think it was in the testimony the last time, that according to present values that nitric and sulphuric acid in the percentages of weight that we had here, the sulphuric acid equalled three per cent by value, just exactly the perventage in the Benzol Products case.

Gen. Appr. McClelland. Anything further on that motion?

Mr. Lawrence. The Benzol Products case was tried on a little different basis than this. I think in that case there was only presented to the Board the percentage of values rather than the percentage of weight.

Gen. Appr. McClelland. That would appear of course from a comparison of the two records.

Mr. Pratt. I think the peapers here show what the weights were. One car, for example—there were two cars involved in the Bonzol case—it appears from the letter of the collector to the appraiser that in one car the sulphuric acid was 15,188 pounds and the nitric 43,452 pounds, in that case the weight was more than thirty per cent.

Gen. Appr. McClelland. How many witnesses were examined in the case?

Mr. Lawrence. One.

Gen. Appr. McClelland. The Board will grant the motion to admit the record with the understanding under the rule if the Government wants to recall the witness for further examination they may do so. I take it, it was an importer's witness?

Mr. Lawrence. Importer's witness.

Gen. Appr. McClelland. That the Government will have that privilege.

Mr. Lawrence. Exception.

Mr. Pratt. Certainly.

Eugene Waugh.

Mr. Lawrence. If the Board please, I move the incorporation of the record in the case of C. J. Tower, 799171.

Gen. Appr. McClelland. Is there objection to that?

Mr. Pratt. I haven't seen that record, nor have I ever heard of the case; is that a published decision?

Gen. Appr. McClelland. Oh, yes.

Mr. Lawrence. Abstract, I think.

Mr. Pratt. Why, as long as the other Benzol case has been admitted, although it seems to me this is in a way immaterial, because the percentages are very different from ours, and it appears from the testimony they were imported in the percentages named for a special purpose, so it seems to me it is immaterial.

Gen. Appr. McClelland. Of course if it appears from the composite record that the question of percentages is a governing feature the Board will give that due consideration, no doubt about that. The record will be admitted with the understanding that the importer shall be accorded the same privilege of recalling the witnesses for further examination.

Mr. Lawrence. I also move in the record in the Nonnalo Chemical Company case, 803766.

Mr. Pratt. That is exactly like the Tower case on the facts?

Mr. Lawrence. Practically, yes.

Mr. Pratt. Yes; that is the way I understand it.

Gen. Appr. McClelland. No objection to that?

Mr. Pratt. No; except the same objection as I made in the Tower case.

Gen. Appr. McClelland. The Board will admit it.

Mr. Lawrence. That is all.

Mr. Pratt. The number of the record in the Benzol Products case I would like to put in the record, 773548. Both sides rest?

Mr. Lawrence. Yes.

Mr. Pratt. I would like to submit a brief.

Gen. Appr. McClelland. We would be very glad to have it.

Gen. Appr. Brown. Both of you abandon the right of having more testimony.

Mr. Pratt. Both of us are satisfied with the testimony.

Gen. Appr. McClelland. Suppose we make it two weeks after the testimony is transcribed for your brief.

Mr. Lawrence. And may the Government have two weeks thereafter in which to reply?

Mr. Pratt. I suggest that we exchange briefs and then submit them; each one reply to the other.

Mr. Lawrence. That compels both sides to file reply briefs.

Gen. Appr. McClelland. Oh, no; you can just file the one brief. We will make it that way.

Mr. Pratt. May I call attention on the record to the paragraphs of the regulations that apply; I don't think that I picked out the particular regulations that have application, so as to

save your honors looking over the whole thing. The particular regulations with respect to the shipment of nitric acid and sulphuric are numbers 1857 and 1858. Then there is a regulation, No. 1867, with respect to how the article must be described in the shipping order, and 1873 as to how it must be described in the waybill. It is because of those regulations that the article was described as mixed acid.

Gen. Appr. McClelland. Does it appear in the record when those regulations were promulgated?

Mr. Pratt. Yes; these were effective October 1, 1914. There is also testimony that before that regulations were in effect for several years, four or five years prior to this.

Gen. Appr. McClelland. We haven't got those regulations.

Mr. Pratt.—No; but the witness said they were the same as these. And also article 1893, which refers to the manner in which carboys must be packed in the car.

I do certify that the foregoing transcript is a correct and true transcription of all testimony offered, heard, or introduced by either party on the trial, together with all the objections made, rulings thereon, and exceptions thereto.

E. C. TRUMBOWER, Jr.

[Exhibits.]

Date shipped.	Protest No.	Entry No.	Car No.	Destination.	Port of entry.
12/ 8/17	850184/ 31	885	AEX. 2059	Emporium, Pa.	Ogdensburg, N. Y.
11/ 5/17	" 29	737	" 4027	" "	" "
11/13/17	"	774	" 2061	" "	" "
11/15/17	850017 "	798	" 2033	" "	" "
11/18/17	"	822	" 2008	" "	" "
11/14/17	"	774	" 2016	" "	" "
12/ 5/17	850018/ 30	904	" 2018	" "	" "
11/12/17	850017/ 29	774	" 2084	" "	" "
12/21/17	850237/ 32	940	" 4030	" "	" "
12/27/17	850375/ 34	972	SCEX. 8003	" "	" "
12/31/17	850236/ 33	959	AEX. 4002	" "	" "
1/19/18	35 & 36	1019	" 2028	" "	" "
"	" " "	"	" 4027	" "	" "
1/17/18	35	1015	SCEX. 8033	" "	" "
"	35 & 36	1019	AEX. 2063	" "	" "

[Endorsed:] 1974. Filed May 2, 1919. United States Court of Customs Appeals. Arthur B.

541—20. (To face page 104.)

EXHIBIT No. 1.—PROTEST No. 850017, ETC.

MIXED ACID—CANADA TO UNITED STATES.

y.	Amt. duty paid.	Less entry fee.	Net amount due to be refunded.	Weight.					Value.				
				Total weight.	% H_2SO_4.	Lbs. H_2SO_4.	% HNO_3.	Lbs. HNO_3.	Total value.	H_2SO_4.		HNO_3.	
										Amount.	%	Amount.	%
, N. Y.				91,660	19.05	17,461	73.11	67,013	$6,416.20	$305.57	4.76	$6,110.63	95.24
"				88,100	18.63	16,413	76.41	67,317	6,167.00	287.23	4.66	5,879.77	95.34
"	$5,616.03	.....	$5,616.03	89,800	22.65	20,340	73.12	65,662	6,286.00	355.95	5.66	5,930.05	94.34
"				88,900	21.55	19,158	70.32	62,514	6,223.00	335.27	5.39	5,887.73	94.61
"				88,000	17.66	15,541	74.73	65,762	6,160.00	271.97	4.42	5,888.03	95.58
"				88,400	17.01	15,037	77.03	68,095	6,188.00	263.15	4.25	5,924.85	95.75
"	946.25	.....	946.25	90,000	18.42	16,578	70.76	63,684	6,300.00	290.12	4.61	6,009.88	95.39
"	957.45	.....	957.45	91,180	21.02	19,166	73.08	66,634	6,382.40	335.40	5.25	6,047.20	94.75
"	927.20	$1.25	925.95	88,180	19.44	17,142	72.02	63,507	6,172.60	299.99	4.86	5,872.61	95.14
"	1,110.90	.....	1,110.90	105,800	21.77	23,033	68.77	72,759	7,406.00	403.08	5.44	7,002.92	94.56
"	935.55	.....	935.55	89,100	19.88	17,713	71.81	63,983	6,237.00	309.98	4.97	5,927.02	95.03
"				92,900	20.87	19,388	71.49	66,414	6,562.00	339.29	5.22	6,163.71	94.78
"	1,922.55	.....	1,922.55	90,200	21.14	19,068	71.34	64,258	6,314.00	333.69	5.28	5,980.31	94.72
"				106,300	21.73	23,099	70.25	74,676	7,441.00	404.23	5.43	7,036.77	94.57
"	2,088.45	.....	2,088.45	92,600	20.91	19,363	71.22	65,950	6,482.00	338.85	5.23	6,143.15	94.77
	$14,504.38	$1.25	$14,503.13	1,381,120	Av. 20.16	278,500	Av. 72.28	998,228	96,678.40	4,873.77	Av. 5.04	91,804.63	Av. 94.96

arthur B. Shelton, Clerk.

Oct. 3/18.

EXHIBIT No. 2, PROTEST 850017, &c., Oct. 3/18.

Interstate Commerce Commission Regulations for the Transportation of Explosives and Other Dangerous Articles by Freight Prescribed under the Act of March 4, 1909, and Section 15 of the Act to Regulate Commerce, as Amended June 18, 1910. Effective October 1, 1914, except as Noted Herein. Paragraphs Are Numbered to Correspond to the Rules and Regulations of the American Railway Association. Including the American Railroad Association Rules. Published by the Bureau for the Safe Transportation of Explosives and Other Dangerous Articles, 30 Vesey Street, New York. March, 1918.

The American Railway Association Rules for the Transportation of Explosives and Other Dangerous Articles by Freight.

General Notice.

The following rules are prescribed in order to make effective for interstate and intrastate shipments of articles subject thereto, the Interstate Commerce Commission Regulations for the Transportation of Explosives and Other Dangerous Articles published July 2, 1914, to became effective October 1, 1914.

It is necessary for railway employees and shippers to become familiar with their specific duties. Railway employees are specially designated to perform certain duties under these regulations, and the paragraphs referred to in the following rules should be studied carefully.

Regulations for the Transportation of Dangerous Articles Other Than Explosives by Freight. Prescribed under Act of March 4, 1909, and section 15 of the Act to Regulate Commerce, as Amended June 18, 1910. Revision Formulated and Published July 2, 1914, Effective October 1, 1914, and Superseding Regulations Published January 1, 1912.

General Notice.

1701. Special precautions are necessary in preparing for shipment packages of dangerous articles other than explosives, and in handling these packages during transit. Any failure of a shipper, or of a carrier, to perform the duties imposed upon him in this respect may be the actual or a contributory cause not only of destructive fires, but of disastrous explosions, since large quantities of explosives are transported frequently through thickly populated districts and in trains containing cars loaded with other dangerous articles.

1702. Sections 235 and 236 of the act of March 4, 1909, require the shipper of dangerous articles to describe and mark his packages properly and to inform the agent of the carrier of the true character of their contents. Heavy penalties are provided for the shipper who knowingly solicits the transportation of dangerous articles without complying with these requirements, as well as for the carrier that knowingly transports them.

1703. To promote the uniform enforcement of law and to minimize the dangers to life and property incident to the transportation by land in interstate commerce of dangerous articles other than explosives, the following regulations are prescribed to define these articles for freight transportation purposes, to state the precautions that must be observed by the shipper in preparing them for shipment and by the carrier in handling them while in transit. It is the duty of each such carrier and shipper to make the prescribed regulations effective and to thoroughly instruct their employees in relation thereto.

1704. These regulations apply to all shipments of dangerous articles other than explosives, including carriers' material and supplies.

1705. Specifications as to containers, methods of packing for shipment, etc., will be considered and prescribed from time to time. Orders prescribing such specifications will be given effective dates as conditions and investigations may appear to warrant.

1706. The Bureau for the Safe Transportation of Explosives and other Dangerous Articles, hereinafter called Bureau of Explosives, organized by the railways under the auspices of the American Railway Association, is an efficient bureau in charge of an expert chief inspector. This bureau will make inspections and conduct investigations and will confer with manufacturers and shippers with a view to determining what specifications and regulations will within reasonable limits afford the highest degree of safety in packing and preparing these dangerous articles for shipment and in transporting the same. The Commission will seek to avail itself of the expert knowledge thus developed and, in formulating amendments to these regulations or specifications supplemental thereto, while not bound thereby, will give due weight to such expert opinions.

General Rules.

1711. Carriers that are subject to the act to regulate commerce must not receive shipments of articles defined as dangerous by these regulations when the shipments are not packed, marked, labeled, described, and certified as prescribed herein. The method of manufacture and packing of articles defined as dangerous by these regulations, so far as it affects safe transportation, must be open to inspection by a duly authorized representative of the initial carrier or of the Bureau of Explosives.

1712. All shipments of articles subject to these regulations offered for transportation in interstate commerce must be properly described by the shipper in his shipping order and bill of lading under the specific or general name provided for the description of such freight by the carrier's classification and tariff governing.

The same description of contents must be marked plainly on the outside of each package.

In less-than-carload shipments each package must be marked also to show plainly the name and address of the consignee. This address, the name of contents, and the required label or "no label required" marking, should be as near together as practicable.

1713. All shipments of articles defined as dangerous by these regulations, and for which detailed instructions for packing are not given herein, must be securely packed in containers strong enough to stand without rupture or leakage of contents all ordinary shocks incident to reasonably careful handling during transit. It is the duty of shippers, where leakage from their shipping containers is known to be a probable source of fire or material damage to other freight, to exercise special care in constructing shipping containers for such articles, even though their names do not appear in the list of dangerous articles, paragraph 1807.

1714. Carriers must forward shipments of dangerous articles other than explosives promptly and within 48 hours after acceptance at originating point or receipt at transfer station or at interchange point, and consignees must remove such shipments from the carrier's property within 48 hours after notice of arrival at destination, Sundays and holidays not included.

1715. (*a*) Serious violations of these regulations such as the discovery of leaking or broken packages of dangerous articles, and accidents or fires in connection with the transportation or storage on carrier's property of dangerous articles, must be reported by the carrier to the chief inspector of the Bureau of Explosives, 30 Vesey Street, New York City.

(*b*) Consignees should report promptly to the chief inspector, Bureau of Explosives, all instances of broken or defective containers in shipments of dangerous articles received by them.

Section 1.

Information and Definitions.

1800. For transportation purposes dangerous articles other than explosives are divided into the following groups:

1. Forbidden articles.
2. Acceptable articles.

Group 1.—Forbidden Articles.

1801. The following are forbidden articles:

(*a*) Outside packages containing in the same compartment interior packages, the mixture of whose contents would be liable to cause a dangerous evolution of heat, gas, or corrosive materials.

(*b*) Cylinders containing gases capable of combining chemically.

(*c*) Packages containing dangerous articles in a leaking condition or in such an insecure condition as to make leakage probable during transit.

(*d*) Rags or cotton waste oily with more than 5 per cent of vegetable or animal oil, or wet rags.

(*e*) Charcoal screenings from wet charcoal, or wet screenings, or screenings that have been wet. (See par. 1833 (*e*).)

(*f*) Dangerous articles not properly packed, marked, labeled, described, and certified.

(*g*) Iron sponge and spent oxide that has not been properly oxidized during manufacture.

Group 2.—Acceptable Articles.

Definitions.

Inflammable Liquids—Red Label.

1802. This group includes any liquid or liquid mixture that gives off inflammable vapors (as determined by flash point from Tagliabue's open-cup tester, as used for tests of burning oils) at or below a temperature of 80° F.

Inflammable Solids—Yellow Label.

1803. This group includes all substances other than those classified as explosives that are liable under conditions incident to transportation to cause fires by self-ignition through friction, through absorption of moisture, or through spontaneous chemical changes.

Oxidizing Materials—Yellow Label.

1804. This group includes all substances, such as chlorates, permanganates, peroxides, and nitrates that yield oxigen readily to stimulate the combustion of organic matter.

Corrosive Liquids—White Label.

1805. This group includes the strong mineral acids (in strength greater than one-half[1] concentrated, i. e., 47 per cent sulphuric, 34 per cent nitric, 20 per cent hydrochloric) and other strongly corrosive liquids that are liable to cause fires when mixed with chemicals or with organic matter, or are liable, in case of leakage from their shipping containers, to damage other freight materially.

Compressed Gases—Red or Green (Gas) Label.

1806. This group includes all inflammable or noninflammable gases assembled for shipment under pressure exceeding 25 pounds per square inch, except when such gases are in cylinders or tubes not exceeding ¾ inch outside diameter and of not more than 4 fluid ounces water capacity.

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[1] For express transportation, greater than one-fourth concentrated.

List of principal dangerous articles.

1807. (*a*) The following list shows the names of well-known articles in general use, other than explosives, that are dangerous; the kind of label required on outside packages; the quantities that may be shipped in one outside package without a label when certified and marked "No label required," and the label exemptions on account of specified packing. (See column 5 of list.)

(*b*) When a shipment described under a name not in the following list is defined as a dangerous one by paragraphs 1802 to 1806, inclusive, the shipper must inform the carrier of the fact by use of the proper label prescribed herein, and the shipping order must show the certificate prescribed by paragaph 1867. The maximum quantity of any such article shipped in one outside package without label, when certified and marked "No label required," except as specified herein, must not exceed the limit prescribed by column 3 of the list for dangerous articles of similar flash point or characteristics.

(*c*) Inflammable liquids as defined by paragraph 1802, in securely closed glass, earthenware, or metal containers of not exceeding one pint capacity each, when flash point is 20° F., or lower, and of not exceeding one quart capacity when flash point is above 20° F., packed and cushioned in fiber board or corrugated strawboard containers, wooden boxes, kegs, or barrels complying with shipping container specifications that apply, may be shipped without labels when certified and marked "No label required."

(*d*) A shipment described under a definite and proper name not in the following list and on a shipping order with no notation as to labels applied and no shipper's certificate, will be assumed by the carrier in the absence of knowledge to the contrary to be not dangerous under these regulations.

(*e*) When articles described under names in the following list marked with (*) are not dangerous under the regulations, the shipper must, unless otherwise provided in said list, state on his shipping order, as a part of the description of such article, "No label required," and must also furnish the certificate prescribed by paragraph 1867 and mark the package "No label required."

(*f*) When several dangerous articles are placed in one outside package without violating these regulations, labels must be applied, when the combined quantity of the articles of any one group exceeds the lowest limit prescribed by column 3 for any of the articles of that group that are included.

(*g*) When dangerous articles requiring the red label are shipped in the same outside package with dangerous articles requiring yellow or white labels, the outside package must be labeled with the red label only.

[Tabulated list of principal dangerous articles opposite page 110.]

Section 2.

Rules for packing.

1821. Dangerous articles for which the yellow and white labels, respectively, are prescribed must not be packed in the same package unless the bottle containing the corrosive liquid is cushioned by incombustible absorbent material in tightly closed metal containers, as prescribed by paragraph 1851. Cylinders of compressed gases must not be packed with other articles.

1822. (*a*) The construction of barrels, drums, boxes, cans, carboys, or other containers purchased subsequent to March 31, 1912, and used in shipping dangerous articles other than explosives must conform to specifications approved by the Interstate Commerce Commission that apply; and each container must be stamped, labeled, or marked "Complies with I. C. C. Spec'n No. —," or equivalent marking, as stated in the specification.

(*b*) In addition to standing the tests prescribed, the design and construction of packages must be such as to prevent the occurrence in individual packages of defects that permit leakage of their contents under the ordinary conditions incident to transportation. The results of experience, gained by an examination of damaged or broken packages on arrival at destination, must be reported to and recorded by the bureau of explosives, to the end that further use of any particular kind of package shown by experience to be inefficient may be prohibited by the Commission.

(*c*) Pending approval and promulgation by the Commission of specifications for types of shipping containers other than those for which specifications are published herein, containers may be used which after investigation made by the Bureau of Explosives, or by other competent testing laboratory in the presence of a representative of the Bureau of Explosives, are shown to possess the general efficiency and the protection against leakage of contents afforded by the standard types of corresponding capacity described in the specifications published herein,* provided they are labelel or marked to show compliance with this requirement.

(*d*) Tank cars used for the shipment of dangerous articles other than explosives must comply with Master Car Builders' rules, and a tank car that leaks or one that has any defect which would make leakage during transit probable or that has not been tested and stenciled in compliance with Master Car Builders' rules, must not be used for the shipment of any inflammable liquid.

(*e*) The tanks and their fittings must be examined by the shipper to see that they are in proper condition for loading. Tanks must be examined for evidence of previous leaks; safety and outlet valves,

* NOTE.—The specifications for shipping containers, Nos. 1 to 24, inclusive, prescribed by the Interstate Commerce Commission, are not republished herein but can be secured from the Bureau of Explosives, 30 Vesey Street, New York.

List of principal dangerous articles.

Name of dangerous articles.	Group number and flash points: Inf. L., inflammable liquid; Inf. S., inflammable solid; Oxi. M., oxidizing material; Cor. L., corrosive liquid; comp. G., compressed gas.	°F.	Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	Kind of label required when quantity exceeds the limit prescribed for "No label required."
1	2		3	4
*Acetone, amyl	Inf. L.	20 to	1 gallon	Red.
Acetone, ethyl	do.	60	do.	do.
Acetone, methyl	do.	60	do.	do.
Acetone (ethyl methyl ketone)	do.	35	do.	do.
*Acid, hydrochloric (muriatic)	Cor. L.		5 pints (6 pounds)	White.
Acid, hydrofluoric	do.		do.	do.
Acid, nitrating (mixed acid)	do.		No exemption	do.
Acid, nitric	do.		do.	do.
*Acid, sulphuric	do.		5 pints (9 pounds)	do.
Alcohol	Inf. L.	57–65	1 gallon	Red.
Alcohol, denatured	do.	20–60	do.	do.
Alcohol, wood	do.	65	do.	do.
Ammonium perchlorate	Oxi. M.		25 pounds	Yellow.
Barium, chlorate of	do.		do.	do.
Barium, nitrate of, in bags	do.		100 pounds (in one shipment).	do.
Barium, peroxide (dioxide, dioxide)	do.		25 pounds	do.
Benzol (benzine)	Inf. L.	20	1 gallon	Red.
Benzine	do.	20	do.	do.
Bromine	Cor. L.		5 pints	White.
Bronzing liquid	Inf. L.	0–20	1 gallon	Red.
Burnt cotton	Inf. S.		No exemption	Yellow.
Calcium phosphide	do.		do.	do.
Carbon bisulphide	Inf. L.	60	5 pounds	Red.
Celluloid scrap	Inf. S.		No exemption	Yellow.
Cement, leather	Inf. L.	20	1 gallon	Red.
*Cement, liquid, n. o. s.	do.	0–20	do.	do.
*Cement, roofing (tar, pitch)	do.	0–20	do.	do.
Cement, rubber	do.	20	do.	do.
Charcoal, wood, ground or pulverized	Inf. S.		100 pounds (in one shipment).	Yellow.
*Charcoal, wood, lump	do.		2,000 pounds (in one shipment).	do.
Charcoal, wood, screenings	do.		No exemption	do.
Chlorates n. o. s.	Oxi. M.		25 pounds (in one shipment).	do.
Chloride of phosphorus	Cor. L.		No exemption	White.
Chlorides, anhydrous, liquid	do.		do.	do.
Chloride of sulphur	do.		do.	do.
*Cleaning fluid (or liquid)	Inf. L.	0–20	1 gallon	Red.
*Coal-tar light oil	do.	0–20	do.	do.
*Coal-tar naphtha	do.	0–20	do.	do.
Collodion	do.	20	do.	do.
Colorine spirits (alcohol)	do.	20	do.	do.
Columbian spirits (alcohol, wood)	do.	45	do.	do.
*Compounds, paint or varnish removing, liquid	do.	0–20	do.	do.
*Compounds, polishing, liquid	do.	0–20	do.	do.
*Compounds, type cleansing, liquid	do.	0–20	do.	do.
*Compounds, vulcanizing	do.	0–20	do.	do.
*Compounds, vulcanizing	Cor. L.		do.	White.
*Distillate	Inf. L.	0–20	do.	Red.
*Dressing, leather	do.	0–20	do.	do.
*Driers, paint or japan	do.	0–20	do.	do.
*Embrocators, paint or grease, liquid	do.	0–20	do.	do.
Ether	do.	20	5 pounds	do.
*Extracts, liquid (flavoring)	do.	20–60	1 gallon	do.
Gases, compressed:				
Acetylene (see note 1)	Comp G.		No exemption	Red (gas).
Air, compressed	do.		do.	Green (gas).
Anhydrous ammonia	do.		do.	do.
Bisulphide	do.		do.	Red (gas).
Carbonic acid	do.		do.	Green (gas).
Chlorine	do.		do.	do.
Coal gas	do.		do.	Red (gas).
Dental	do.		do.	Green (gas).
Hydrogen	do.		do.	Red (gas).
Liquefied petroleum gas	do.		do.	do.
Oxygen	do.		do.	Green (gas).
Phosgene	do.		do.	Red (gas).
Sulphur dioxide	do.		do.	Green (gas).
Compressed gases n. o. s.	do.		do.	Red or green (gas).
Gas drips (hydrocarbons)	Inf. L.	20	1 gallon	Red.
Gasoline (see note 1)	do.	20	do.	do.

...pal dangerous articles—Continued.

Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	Kind of label required when quantity exceeds the limits prescribed for "No label required."	Reference for packing requirements, paragraph numbers, remarks for information, and rules for exemptions of similar articles.
3	4	5
1 gallon	Red	Pars. 1403(e), 1422, 1424 to 1427.
do	do	Do.
do	do	Pars. 1403(e), 1422, 1424 to 1427. (See Paint.)
100 pounds (in one shipment).	Yellow	Pars. 1422 and 1441. (See Notation.)
No exemption	Red	Pars. 1403(e), 1422, 1424 to 1427.
do	Yellow	Pars. 1427 and 1441.
1 gallon	Red	Pars. 1403(e), 1422, 1424 to 1427.
do	do	Do.
100 pounds (in one shipment).	Yellow	Pars. 1422 and 1441. Nitrates (a fusion, fusion, or hydrate are exempt from label and certificate requirements when properly so described.
No exemption	Red	Wool mixture not less than 10 per cent by weight of a solvent whose flash point is not lower than 10° F. and must be packed in glass bottles (par. 1424) or in securely closed metal vessels that will stand the drop tests prescribed for metal barrels (specification No. 5.)
do	Yellow	Par. 1419. Dry ammonium and dry ammonium are high explosives.
1 gallon	Red	Pars. 1403(e), 1422, 1424 to 1427.
do	do	Do.
do	do	See Paint.
do	do	Pars. 1403(e), 1422, 1424 to 1427. Inflammable paint, varnish, wood filler, or wood stain, liquid, in glass or earthenware vessels, or in metal cans, all packed in wooden barrels or boxes and marked to show exempt stave with specifications (see par. 1422), are exempt from label when marked and certified "No label required." Noninflammable paint is not subject to these packing requirements, but must be marked and certified "No label required." Dry paint is exempt from label and certificate requirements when properly so described.
1 gallon	do	Pars. 1403(e), 1422, 1424 to 1427.
25 pounds	Yellow	Pars. 1427 and 1441.
do	do	Do.
do	do	Do.
1 gallon	Red	Pars. 1403(e), 1422, 1424 to 1427.
do	do	Do.
No exemption	White	Pars. 1422 and 1441.
do	Yellow	Par. 1427.
do	do	Par. 1441.
1 gallon	Red	Pars. 1403(e), 1422, 1424 to 1427.
do	do	Do.
25 pounds	Yellow	Pars. 1422 and 1441.
do	do	Do.
do	do	Pars. 1427 and 1441. (See Nitrates.)
25 pounds (in one shipment).	do	Pars. 1422 and 1441.
No exemption	do	Par. 1431.
do	do	Par. 1435.
do	do	Par. 1439.
1 gallon	Red	Pars. 1403(e), 1422, 1424 to 1427.
10 pounds	Yellow	Par. 1449.
100 pounds (in one shipment).	do	Pars. 1422 and 1441.
1 gallon	Red	See Paint.
25 pounds	Yellow	Pars. 1422 and 1441.
100 pounds (in one shipment).	do	Pars. 1422 and 1441. (See Nitrates.)
25 pounds	do	Pars. 1422 and 1441.
No exemption	do	Par. 1431.
do	do	Pars. 1422 and 1441.
do	do	Par. 1435.
100 pounds (in one shipment).	do	Pars. 1422 and 1441. (See Nitrates.)
No exemption	White	Pars. 1422, 1451, 1452, and 1456.
do	do	Par. 1456.
1 gallon	Red	Pars. 1403(e), 1422, 1424 to 1427.
No exemption	Yellow	Par. 1424.
1 gallon	Red	See Paint.
10 pounds	Yellow	Par. 1449.

† *As at below.*

dome covers, and outlet-valve caps must be in proper condition before loading; after loading, tanks must not show any dropping of liquid contents at the seams or rivets, and should such dropping appear cars must be properly repaired; outlet valves must not permit more than a dropping of the liquid with valve caps off, otherwise valve must be reground and repaired. Dome covers, and valve caps provided with suitable gaskets, must be properly screwed in place before cars are tendered to the carrier.

(*f*) Loaded tank cars tendered for shipment must be inspected by the carrier to see that they are not leaking, that the air and hand brakes, journal boxes, trucks, and safety appliances are in proper condition for service, and that the car has been tested within limits prescribed by master car builders' rules.

(*g*) Tests of all tank cars and their safety valves, as made in compliance with master car builders' rules, must be certified by the party making the tests to the owner of the tank car and to the chief inspector, Bureau of Explosives; and this certification must show the initials and number of the tank car, the service for which it is suitable, the date of test, place of test, and by whom made.

Inflammable liquids—Red label.

1824. (*a*) All inflammable liquids must be shipped in packages complying with specifications that apply as follows:

(*b*) In tightly closed metal cans of not exceeding 10 gallons capacity, packed in wooden boxes complying with specification No. 2 or cushioned in wooden barrels or kegs complying with specification No. 11.

(*c*) In well-stoppered glass or earthenware vessels of not exceeding 1 gallon capacity, cushioned in wooden boxes complying with specification No. 2, or cushioned wooden barrels or kegs complying with specification No. 11, or in a well-stoppered glass or earthenware vessel of not exceeding 5 gallons' capacity, well cushioned in a wooden box and not more than one such vessel in the box. The completed package must comply with swing and drop tests prescribed for boxed carboys by specification No. 1.

(*d*) In well-stoppered glass, earthenware, or metal vessels of not exceeding one pint capacity when flash point is 20° F. or lower, and one quart capacity when flash point is above 20° F., cushioned in fiber board or corrugated strawboard containers complying with specification No. 24.

(*e*) In wooden kits of not exceeding 10 gallons' capacity, packed in wooden boxes complying with specification No. 2, or cushioned in wooden barrels or kegs complying with specification No. 11.

(*f*) In metal-jacket cans of not exceeding 10 gallons' capacity, complying with specification No. 23.

(*g*) In well-stoppered carboys of not exceeding 13 gallons' capacity, cushioned in wood boxes complying with specification No. 1.

(*h*) In wooden barrels or kegs complying with specification No. 17 when the flash point of the liquid is not lower than 20° F., or in wooden barrels or kegs complying with specification No. 9

when the flash point is lower than 20° F., unless otherwise provided in the tariffs under which shipment moves.

(*i*) In metal barrels or drums complying with specification No. 5.

(*j*) In tank cars complying with master car builders' specifications, provided the vapor tension of the inflammable liquid corresponding to a temperature of 100° F. (90° F. November 1 to Mar. 1) does not exceed 10 pounds per square inch. After May 1, 1915, a tank car must not be used for shipping inflammable liquids with flash point lower than 20° F. unless it has been tested with cold-water pressure of 60 pounds per square inch and stenciled as required by master car builders' rules.

(*k*) Liquid condensates from natural gas or from casing-head gas of petroleum oil wells whose vapor tension at 100° F. (90° F. November 1 to March 1) exceeds 10 pounds per square inch, must be described as liquified petroleum gas. In measuring the vapor tension the container of the sample may be vented momentarily at a temperature of 70 degrees F. This product must be shipped in metal drums or barrels which comply with specification No. 5 and have a nominal capacity not exceeding 55 gallons; or in special insulated tank cars approved for this service by the Master Car Builders' Association, provided the vapor tension as above defined does not exceed 15 pounds per square inch from April 1 to October 1, and 20 pounds per square inch from October 1 to April 1. When the vapor tension as above defined exceeds 25 pounds per square inch, cylinders as prescribed for compressed gases (see paragraphs 1861 to 1863, inclusive) must be used.

When the condensate, blended or unblended with other products, has a vapor tension as above defined not exceeding 10 pounds per square inch, and is shipped as "gasoline" in an ordinary tank car, 60-pound test class, defined in Master Car Builders' Association specifications for tank cars, the safety valves of such a car must be set to operate at 25 pounds per square inch, with a tolerance of one pound above or below; and the mechanical arrangements for closing the dome cover of this car must either be such as to make it practically impossible to remove the dome cover while the interior of the car is subjected to pressure or suitable vents that will be opened automatically by starting the operation of removing the dome cover must be provided. The shipper must attach securely and conspicuously to the dome and to the dome cover white placards conforming to samples furnished by the chief inspector of the Bureau of Explosives, cautioning all railway and refinery employees not to remove the dome cover while interior pressure exists. The presence of these dome placards must be noted on the shipping order and on the billing accompanying the car. This regulation must be made effective not later than May 15, 1916, at all points where this condensate from natural gas or "casing-head gas" is produced and shipped in a blended or unblended state; and the requirements for construction of dome covers and valve setting at 25 pounds must be made effective not later than July 1, 1917, for all tank-car shipments of inflammable liquids with flash points lower than 20° F.

When the "blowing" of safety valves of a car containing inflam-

mable liquids is noted, any available means for cooling the car shell and contents, such as spraying with water should be utilized; and if practicable, the car should be moved to an isolated point, to minimize the fire risk. Covering the safety valves with wet cloth, wet blankets or wet gunny sacks will decrease the danger of igniting vapors escaping from a "blowing" valve. The burning of these vapors at the safety valve is not liable to cause an explosion. The valves are designed to permit, in emergencies, the burning in this way of the entire contents of the car.

(*l*) Carbon bisulphide in interior packages of capacity greater than ½ gallon must be shipped in metal cans of not less than 28 gauge, boxed, complying with Specification No. 2, or in metal barrels or drums complying with Specification No. 5, such barrels or drums after January 1, 1916, not to exceed 55 gallons capacity. Carbon bisulphide may also be shipped in tank cars complying with paragraph 1824 (*j*).

1825. (*a*) Packages containing inflammable liquids must not be entirely filled. Sufficient interior space must be left vacant to prevent leakage or distortion of containers, due to increase of temperature during transit. In all such packages, this vacant space must not be less than 2 per cent of the total capacity of the container. In tank cars the vacant space must not be less than 2 per cent of the total capacity of the tank, i. e., the shell and dome capacity, combined. If the dome of tank cars does not provide this 2 per cent, sufficient vacant space must be left in the shell of the tank to make up the difference.

(*b*) In packages containing alcohol, cologne spirits, high wines, or other distilled spirits, the vacant interior space or allowance for wantage or ullage must conform to the United States Internal Revenue Regulations.

1826. Interior packages containing 1 quart or more of an inflammable liquid must be packed with their filling holes up and the top of the outside packages must be plainly marked "This side up."

1827. Wooden-jacketed cans and wooden kits must not be used for the shipment of inflammable liquids, except as inside containers as provided by Specification No. 2 or 11.

Inflammable solids—Yellow label.

1830. All inflammable solids except those for which specially constructed containers are prescribed must be shipped as follows:

(*a*) In wooden barrels or kegs complying with Specifiaction No. 11.

(*b*) In wooden boxes complying with Specification No. 19.

(*c*) In metal barrels or drums complying with Specification No. 20.

(*d*) In wooden or fiber drums complying with Specification No. 21 or 22.

(*c*) Charcoal may also be shipped in bags, barrels, boxes, or in bulk, as prescribed by paragraph 1833.

1831. Metallic sodium or potassium, in quantity not greater than 1 pound, must be placed in neutral oil, and this in a well-stoppered bottle protected by a tin container and boxed (see Specification No. 18); or these substances may be packed in hermetically sealed tin cylinders, boxed (see Specification No. 18); or in tight iron drums (see Specification No. 20, part A).

1832. White or yellow phosphorus must be placed in water in sealed metal vessels inclosed in wooden boxes. (See Specification No. 18.)

1833. (*a*) All charcoal made in ovens or retorts must be cooled thoroughly in air-tight containers and it must be exposed thereafter to the atmosphere under conditions favorable to good circulation of air through the charcoal in order to remove the danger of spontaneous ignition. Carcoal made in the round retorts and transferred to air-tight metal cans must be cooled 24 hours or more; but charcoal burned in slatted cars should be kept for two periods of 24 hours each in first and secondary air-tight cooling chambers, respectively. After proper cooling the exposure of the charcoal to good fresh-air circulation must continue for not less than 44 consecutive hours. The charcoal during this air exposure must be protected from the weather. Where the charcoal is aired by spreading on a floor it must not be piled more than 1 foot in depth. A total of not less than 72 hours must elapse from the time the air exposure of the charcoal commences before a car loaded with it is closed for shipment or before lump charcoal is placed in tight bags.

When fire occurs in charcoal during the air exposure it should be extinguished with as little water as possible or placed in a cooler until the fire is extinguished. Any charcoal wet in this way must be dried by again heating in the retorts or ovens, and cooled and aired in the usual manner, or set aside and allowed to dry for not less than 30 days before shipment.

(*b*) Lump charcoal must be dry and free from screenings and brands and must be loaded into a tight box car. When a chute is used in loading a car, the chute must contain a properly constructed screen, not less efficient than three-fourths-inch mesh, which must be kept clean. No water must be used in loading the car; forks with prongs not less than 1 inch apart must be used instead of shovels to handle the coal, and the screenings which accumulate in the doorway of the car must be removed before loading in the doorway. Car should be swept before loading, the doors closed tight before the car is forwarded, and a car which has contained lime must not be used without thorough cleaning.

When preferred by the shipper, the carrier may permit lump charcoal made from soft wood to be shipped in open or stock cars.

(*c*) Charcoal screenings consist of small pieces varying from about one-half inch in their maximum dimension to grains of charcoal

dust. Experience shows these screenings to be more liable than other forms of charcoal to produce fires. Charcoal screenings from wet charcoal, or wet screenings, or screenings which have been wet, must not be offered for shipment unless these screenings are dried for not less than 12 hours in a retort or oven and then subjected to a period of not less than 10 days' airing and cooling before shipment. During this period of cooling and airing the screenings must be under cover and either in the slatted cars or in loosely piled bags.

(*d*) Charcoal screenings intended for shipment, or from which granulated or ground charcoal is to be prepared for shipment, must be stored in loosely piled bags freely exposed to the air for a period of not less than five days after separation from the lump charcoal and before shipment or before grinding. Lump charcoal intended for the production of granulated or ground charcoal, which will be subsequently shipped, must be stored subject to ventilation and protected from the weather for not less than 12 days after removal from the coolers before grinding.

(*e*) Charcoal screenings and brands or ground charcoal must be packed in tight wooden boxes or barrels containing not more than 4 bushels each; or in strong and securely closed paper bags, or in strong bags with tight paper linings; or in strong jute bags. Paper bags or paper-lined bags must not contain more than 2½ bushels each; unlined jute bags must not contain more than 4 bushels each, and all boxes, barrels, or bags after filling should whenever practicable be allowed to remain open and freely exposed to the air and protected from the weather for not less than 24 hours before being closed.

(*f*) Charcoal screenings or ground or pulverized charcoal in bags must be so loaded that the bags are laid horizontally in the car, parallel to the length of the car, and so piled that there will be two longitudinal spaces the full length of the car completely dividing the lading into three approximately equal portions. These spaces must not be less than 4 inches wide. Transverse wooden strips must be laid between the bags and extending the full width of the car; these strips should be approximately 2 feet apart vertically and longitudinally. These strips serve to maintain the bags in their relative positions. The bags must not be piled to within 6 inches of the top of the car, and no more than 26,000 pounds of screenings, ground or pulverized charcoal shall be loaded in a car. A tight car must be used, and any loose material must be swept up and removed from the doorway of the car before completing the loading. Other methods of loading may be used when investigations by the Bureau of Explosives show such methods to be equally efficient in securing the necessary ventilation.

NOTE.—Experience having shown that charcoal screenings from "Pinon" wood can be shipped in bulk without danger of spontaneous heating, this method of shipment may be used for those screenings when rules of individual carriers permit.

(*g*) Charcoal burned in pits or kilns must be thoroughly cooled in the sealed kilns. After the kilns are opened, the charcoal must

be allowed to stand in the open kilns or elsewhere exposed to the air for not less than 24 hours before loading in a freight car. Charcoal burned in kilns may be loaded in open cars or in box cars, but after the loading in box cars, the cars must be allowed to stand not less than 24 hours with doors open before shipment.

(*b*) Reburned charcoal must be cooled and exposed to good fresh air circulation for not less than 5 days after removal from the reburning furnaces, and before being shipped or ground to produce ground or pulverized charcoal.

1834. Nitrocellulose or nitrostarch uniformly wet with not less than 20 pounds of water to 80 pounds of dry material and picric acid or trinitrotoluol wet with not less than 10 pounds of water to 90 pounds of dry material must be placed in waterproof containers, securely packed in a strong and tight box, keg, or barrel (see Specifications Nos. 10 and 17), and marked "WET NITROCELLULOSE—20 PER CENT WATER," or "WET NITROSTARCH—20 PER CENT WATER," or "WET TRINITROTOLUOL—10 PER CENT WATER," or "WET PICRIC ACID—10 PER CENT WATER."

The gross weight of any box or keg must not exceed 400 pounds and the gross weight of any barrel must not exceed 510 pounds. (Effective November 7, 1916.)

1835. (*a*) Calcium phosphide must be placed in hermetically sealed metal cans inclosed in metal-lined wooden boxes (see Specification No. 18); or this material may be shipped in securely closed iron or steel barrels. (See Specification No. 20, part A.)

(*b*) Sodium sulphide fused or potassium sulphide fused, if ground or powdered, must be placed in hermetically sealed metal cans, or in securely closed glass bottles, each bottle inclosed in a tightly fitting metal can with tight cover. The cans must be packed in a strong wooden box (see Specification No. 18), with elastic packing, such as sawdust, excelsior, or similar material. This material may also be shipped in securely closed metal barrels complying with Specification No. 20, part A.

1836. (*a*) "Strike Anywhere" matches must be packed in individual containers consisting of an outer sliding shuck or cover and an inner holding tray or box. Individual containers consisting of a holding tray or box with a top that telescopes over the box, may be used. Boxes of suitable "hang-up" type may also be used, if approved by the Bureau of Explosives. All match boxes, covers, and trays must be made of cardboard, wood, or metal, except that paper wrappings may be used for block or card matches.

Individual containers must be wrapped in paper, with not more than 12 boxes or individual containers in each paper-wrapped package. These packages must be secured on the ends and on the lapping side with glue, or similar satisfactory adhesive, making each 12 boxes or less of matches a serviceably wrapped and well-secured package.

(*b*) No individual container (not including card or block

matches), shall contain more than 700 "Strike Anywhere" matches in any one container, box, or package. When more than 300 matches are packed in any individual container, box, or package, the matches must be arranged in two nearly equal portions with the heads of the two portions placed in opposite directions. All individual containers containing 350 or more matches must have placed over the matches a center holding or protecting strip made of cardboard, which can be scored or bent without fracture. This protecting strip shall be not less than 1¼ inch wide and shall be flanged down at least ½ inch on each end to hold the matches in position when the container is nested into the shuck or cover, or withdrawn therefrom.

(*c*) All individual containers must be placed in outside packages complying with Specification No. 6. Such outside containers shall have plainly marked thereon the words "Strike Anywhere matches" and in addition shall show the name of the manufacturer and the brand or trade-mark under which such matches are manufactured and distributed to the trade. If the matches are manufactured in a foreign country the name of the foreign manufacturer shall be printed in English.

(*d*) Matches of any kind which ignite spontaneously when subjected for 8 hours to a temperature of 200° F., in a properly conducted laboratory test, must not be offered for shipment.

(*e*) Matches of any kind must not be packed in the same outside package with any other article.

(*f*) "Strike Anywhere" matches packed and marked in accordance with regulations effective March 31, 1912, may be shipped under such packing and marking until December 31, 1914.

1837. "Burnt Cotton" is cotton that has been on fire, and which has not been subsequently repicked and rebaled. It must not be offered or accepted for shipment at an originating station until it has been reconsidered by picking and repacking in bales, or until not less than 5 days have elapsed since the last evidence of fire in it. It must be marked and described on shipping orders and bills of lading as "burnt cotton, yellow label," and cars containing any quantity of it must be protected by the inflammable placard.

When the fire occurs in transit at a point where the cotton can not be reconditioned, and where arrangements can not be made with the originating line to sell it, all burnt cotton in the shipment must be stored under observation in as safe a place as practicable for not less than 10 days, and without further evidence of fire before forwarding. The billing must be changed to read "burnt cotton," and the material must be forwarded as an inflammable article as described above.

When burnt cotton is picked and repacked the separated cotton not affected by the fire is not classed an an inflammable article and is not subject to this regulation.

1838. (*a*) Unless the preparation and nature of fibers or fabrics impregnated or saturated with animal or vegetable oils, is such as to prevent all spontaneous heating in transit, such materials must be placed in hermetically sealed metal-lined wooden boxes or crates.

(*b*) Rags or cotton waste containing more than 5 per cent of animal or vegetable oil must not be offered for shipment. Oily cotton waste must not be included in bales of rags.

1839. Pyroxylin plastic scrap (celluloid, fiberloid, pyralin, viscoloid, zylonite, etc., scrap) must be packed in tight wooden barrels (Specification No. 11) or in spark-proof wooden boxes (Specification No. 19).

1840. Rubber shoddy, regenerated rubber, or reclaimed rubber, must be packed in tight metal containers or in wooden boxes complying with Shipping Container Specification No. 17, except when in the form of dense homogenous nonporous sheets or rolls, the sheets of thickness of ⅛ inch or greater, packed flat or in rolls.

Rubber scrap if ground, powdered, or granulated, whose rubber content exceeds 45 per cent as determined by subtracting the sum of the per cent ash and the per cent acetone extract from 100, must be packed in tight metal containers, or in wooden boxes complying with Specification No. 17.

Oxidizing materials—Yellow label.

1841. (*a*) All oxidizing materials (except those for which specially constructed containers are prescribed, see Specifications Nos. 18 and 20) should be shipped in metal packages complying with Specification No. 20. When such metal packages are not available, strong and tight wooden boxes complying with Specification No. 19, or drums, kegs, or barrels complying with Specifications Nos. 11, 21, or 22, must be used.

(*b*) Peroxide of sodium must be packed in tight metal vessels packed in wooden boxes or barrels (Specifications Nos. 18 and 11) or in bulk in metal containers complying with Specification No. 20.

(*c*) Nitrates may also be shipped in bags, or in bulk in tight cars.

(*d*) Barium peroxide in bulk must be placed in strong and tight metal containers complying with Specification No. 20.

Corrosive liquids—White label.

1851. (*a*) Bottles containing corrosive liquids named in the list, paragraphed 1807, unless cushioned by incombustible absorbent material in tightly closed metal containers, must not be packed in the same outside package with any other article, except that acid for fire extinguisher charges may be packed in the same outside package with bicarbonate of soda, when the acid and soda are placed in separate inside compartments.

(*b*) Interior packages containing corrosive liquids must be packed with their filling holes up, and the top of the outside package must be plainly marked "This Side Up."

1852. (*a*) All glass carboys used for the shipment of acids named in paragraph 1807 must be made and tested by the manufacturer under Specification No. 1. Straight-sided carboys, as distinguished

from the "balloon" carboys, must be used for all shipments of nitric acid or nitric-acid mixtures, and for less-than-carload shipments of the other dangerous acids, except hydrofluoric acid.

The necks of all carboys must be protected by wooden or metal hoods securely attached to the boxes.

1853. Bromine must be in glass bottles of not more than one-half gallon capacity or earthenware vessels of not more than 2 gallons capacity with glass or earthenware stoppers well secured. These vessels must be packed in strong barrels or kegs complying with Specification No. 11, or in wooden boxes, cushioned by noncombustible packing material, such as whiting, mineral wool, or sifted ashes.

1854. Hydrofluoric acid must be placed in india rubber or ceresine bottles hermetically sealed, packed in wooden boxes or wooden barrels complying with shipping container Specification No. 2 or 11; or in lead carboys hermetically sealed and boxed, complying with Specification No. 1; or acid of not exceeding 30 per cent strength may be shipped in tight hardwood barrels complying with Specification No. 9, or in wooden tank cars lined with asphaltum or similar protective coating. The barrels and tank cars must be securely hooped and carefully inspected by the shipper. The vacant space in containers of this acid must be sufficient so that when raised to a uniform temperature of 130° F. the vapor tension shall not exceed 6 pounds per square inch.

1855. (*a*) Sulphuric acid and anhydrous liquid chlorides must be in well-stoppered earthenware or glass vessels packed in strong barrels (Specification No. 11), or wooden boxes (Specification No. 2), or in standard carboys (Specification No. 1), or in metal drums or barrels (Specification No. 5), or in tank cars. The inner containers must be well cushioned by excelsior, hay, straw, or equivalent packing material.

(*b*) For phosphorus trichloride the cushioning material must be incombustible.

1856. Hydrochloric acid must be packed as prescribed for sulphuric acid, except that it must not be shipped in unlined wooden or iron barrels, drums, or tank cars.

1857. (*a*) Special attention must be given to bottles or vessels of any kind used for nitric acid. The following containers are authorized for shipment of nitric acid of the specific gravity stated:

(1) Glass bottles not exceeding 7 pounds capacity, in metal containers. All gravities.

(2) Glass bottles not exceeding 7 pounds capacity. Not to exceed 1.49 gravity.

(3) Glass carboys, Specification No. 1. Not to exceed 1.43 gravity.

(4) Glass carboys, metal covered. Not to exceed 1.49 gravity.

(*b*) All glass bottles, (1) and (2), must have glass stoppers ground to fit and these stoppers must be held in place by plaster of Paris covered by strong cloth securely tied. The bottles, well cushioned by material that will not be ignited by the acid, must be packed in strong wooden boxes, barrels, or kegs. When the specific gravity of the acid exceeds 1.49, each bottle must be packed in a tightly closed metal container.

(*c*) Glass carboys, (3), must be well cushioned by material that will not be ignited by the acid.

(*d*) A glass carboy (4) containing acid of gravity exceeding 1.4[illegible] and not exceeding 1.49, must be well cushioned by incombustible packing material in a tight cylindrical iron case not less than [illegible] inch thick that covers the bottom and sides of the carboy and fits tightly in the outside wooden box.

1858. Mixed nitric and sulphuric acids must be shipped in securely closed iron drums that comply with Specification No. 5 or in tank cars complying with Master Car Builders' specifications; or mixed nitric and sulphuric acids may be shipped in carboys, provided these carboys are placed in a tight cylindrical iron case as prescribed by paragraph 1857 (*d*), and boxed as prescribed in Specification No. 1.

Compressed gasses—Red or green (gas) label.

1861. (*a*) Gasses that may combine chemically must not be shipped in one cylinder.

Cylinders manufactured after the date on which specifications therefor were first made effective and used for the shipment of any compressed gas must be made in accordance with the specifications effective at the date of manufacture.

Cylinders purchased after the date of which specifications therefor were first made effective and used for the shipment of any compressed gas must have been made in accordance with specifications approved on or after that date. Provided that this does not apply to the purchase of the entire cylinder assets of one company by another nor to the common practice of the retail sale of charged cylinders subject to return and exchange: Provided further, that cylinders made prior to the date on which specifications therefor were first made effective may be purchased and used for the transportation of any compressed gas if a report be submitted to the Bureau of Explosives, 30 Vesey Street, New York City, showing that within three months of the date of submission of the report such cylinders have successfully passed the hydrostatic tests prescribed by the latest effective specifications for such cylinders. Such report shall include detailed results of the hydrostatic test and all other data available regarding the cylinders.

(*b*) Each cylinder in which compressed gasses are shipped, except as specified hereinafter, must be subjected at least once in 5 years to a test by interior hydrostatic pressure in a water jacket, or other apparatus of suitable form, to furnish reliable data. In this test the

pressure must be applied for not less than 30 seconds, and as much longer as may be necessary to insure complete expansion of the cylinder. The gauge indicating the expansion of the cylinder under the pressure applied must be such that a permanent expansion of 10 per cent of the total expansion may be easily recognized.

A cylinder must be condemned when it leaks or when the permanent expansion, as determined by the water-jacket method of testing, or other equally efficient method of testing approved by the Bureau of Explosives, exceeds 10 per cent of the total expansion.

(*c*) For cylinders in which liquefied gases are shipped the test pressure must be not less than 1¼ times the interior pressure that would result from heating the cylinder uniformly in its maximum charged condition to a temperature of 130° F., except that for cylinders used for shipping carbonic-acid gas this pressure must not be less than 3,000 pounds per square inch, provided that when the charging pressure is less than 300 pounds per square inch at 70° F. it will not be necessary to measure the permanent expansion in quinquennial pressure tests, if the cylinder in question has previously passed the test.

(*d*) For cylinders used for shipping nonliquefied gases or gases in solution under a pressure exceeding 300 pounds per square inch at 70° F. the test pressure must be not less than 1⅔ times the charging pressure for such cylinders, corresponding to a temperature of 70° F., provided that the minimum allowable test pressure shall be 600 pounds per square inch.

(*e*) For cylinders used for shipping nonliquefied gases or gases in solution under a pressure not exceeding 300 pounds per square inch at 70° F. the test pressure must be not less than twice the charging pressure for such cylinders corresponding to a temperature of 70° F., provided that old cylinders in service that have been once so tested, or new cylinders that have been manufactured, tested to three times the charging pressure, and reported as prescribed by specification Nos. 7 or 8, will not be required to be tested quinquennially thereafter.

(*f*) Cylinders used for shipping any gas, liquefied or otherwise, will not be required to stand the quinquennial test, provided they have an outside diameter of less than 2 inches and a length of less than 2 feet.

(*g*) The weight of gas charged into any cylinder must not, at a temperature of 130° F., cause an interior pressure that would be injurious to the cylinder. Cylinders must not be charged beyond the safe pressure for which they are designed.

(*h*) The filling weight of carbonic-acid gas in all cylinders must be checked by the use of proper scales and not by pressure.

(*i*) By December 31, 1914, all cylinders used for the shipment of compressed gases must be plainly stamped with the date of last test—for example, "4—09" for April, 1909. Cylinders that have not been tested and marked as prescribed herein must not be charged and shipped after December 31, 1914, until properly tested and marked.

(*j*) Cylinders containing acetylene gas must be made of tough steel and must be completely filled with a porous material that has

been tested with satisfactory results by the Bureau of Explosives, and this material must be charged with acetone, or its equivalent, not to exceed 40 per cent of the interior volume capacity of the cylinder. The pressure in cylinders containing acetylene gas must not exceed 250 pounds per square inch at a temperature of 70° F.

1862. (*a*) After December 31, 1914, each cylinder exceeding 12 inches in length containing liquefied gases or gases in solution, or other gases under a pressure of more than 300 pounds per square inch at 70° F. (except anhydrous ammonia), must be equipped with a safety device tested by the Bureau of Explosives and found to prevent explosion of the normally charged cylinder when it is placed in a fire.

(*b*) Chlorine gas may also be shipped in special tank cars complying with Master Car Builders' rules and specifications.

1863. (*a*) When cylinders containing inflammable gases are not boxed or crated for shipment, the discharge valves must be strong enough to avoid injury during transit or they must be protected by strong metal caps that can not be detached by rolling the cylinders.

(*b*) Shipments of cylinders (that under individual carriers' arrangements can be transported without transfer), if loaded by the shipper, to be unloaded by the consignee, may be transported without crating or boxing, provided the cylinders are loaded compactly in an upright position in the end of the car, and are securely braced to prevent any relative movement during transit, according to the general methods prescribed by B. E. Pamphlet No. 6 for bracing shipments of explosives.

Labels.

1864. (*a*) Unless exempted on account of quantity or method of packing (see columns 3 and 5, list, par. 1807), all packages containing dangerous articles named in the list, paragraph 1807, and similar articles defined by paragraphs 1802 to 1806, inclusive, must be conspicuously labeled by the shipper. Labels should be applied when practicable to that part of the package bearing the consignee's name and address.

(*b*) Labels will not be required on packages in carload shipments to be unloaded by the consignee, but the proper placards must be obtained from the carrier and applied by the shipper to the car loaded by him. When it is known, however, that subsequent shipments of these packages in less-than-carload quantities, and in the original outside packages, will probably be made by the consignee, the original manufacturing shipper should attach labels to the packages.

(*c*) Shippers must furnish and attach the labels prescribed for their packages. Labels must not be applied to packages containing articles which are not subject to these regulations, nor to packages which are exempt from labels on account of quantity or method of packing. (See columns 3 and 5, list, par. 1807.) Packages con-

taining articles which are subject to these regulations and which are thus exempt from labels, must be plainly marked "No LABEL REQUIRED."

(*d*) Containers shipped as "EMPTY" (except in carload shipments to be unloaded by consignee) must have the old red, yellow, white, or green labels removed or completely covered by a square white label measuring not less than 6 inches on each side, and bearing thereon the word "EMPTY" in letters not less than 1 inch high.

1865. Labels must be of diamond shape, with each side 4 inches long. The color is red for inflammable liquids and compressed inflammable gases, yellow for inflammable solids and oxidizing materials, green for noninflammable compressed gases, and white for corrosive liquids. Labels must conform to standards as to size, printing, and color and samples will be furnished, on request by the chief inspector of the Bureau of Explosives, 30 Vesey Street, New York City.

1866. The wording must be in black letters inside of a black line border measuring 3½ inches on each side, and as follows:[1]

Shipping orders.

1867. (*a*) Any article subject to these regulations whether label is required or not, must be described on the shipping order under the specific or general name provided for the description of such freight by the carrier's classification and tariff governing.

(*b*) The shipping order must also show opposite the entry of the article the kind of label applied, or "No label required." For carload lots of such articles loaded by the shipper, the shipping order must show the kind of placard applied to the car, or "No placard required."

(*c*) The shipping order must also show the following certificate in the lower left-hand corner over the written or stamped facsimile signature of the shipper or of his duly authorized agent:

This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation according to the regulations prescribed by the Interstate Commerce Commission.

(*d*) A shipping order that does not cover the shipment of an article classed as dangerous or doubtful by these regulations must not show thereon the label notation or the certificate prescribed for dangerous articles. Unnecessary certificates and label notations on shipping-order blanks must be canceled by the shipper.

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[1] The carrier's name and form number, or the shipper's name and address, may be printed on the labels, in type not larger than 10 point, if placed within the black line border and in the upper or lower corner of the diamond.

(*c*) Whenever orders are placed in foreign countries for the importation of dangerous articles to be forwarded from port of entry by rail, the importer must furnish with the order to the foreign shipper and also to the forwarding agent at the port of entry, full and complete information as to the necessary packing, marking, and labeling required by these regulations. The forwarding agent must file with the originating carrier a certified shipping order and must see that the packages are properly packed, marked, and labeled.

Section 3.

Rules for handling.

1871. (*a*) Packages known to contain dangerous articles (see list, par. 1807), and not properly packed, described, marked, labeled, and certified must not be accepted by the originating carrier until these regulations are complied with. A careful inspection of the shipping order and of such packages with special attention to the discovery and rejection of leaking or insecure packages must be made to verify this compliance.

(*b*) Unless they are leaking, or in a manifestly insecure condition, packages in transit must be forwarded to destination and report made of any violation observed. Leaking packages must not be forwarded.

(*c*) An astray package of known destination and in proper condition for safe transportation must be forwarded on an "Astray bill," showing the proper label notation.

When necessary to replace labels, and doubt exists as to the kind, the red label should be used.

(*d*) Unauthorized persons must not be allowed to have access to explosives or other dangerous articles at any time while such articles are in the custody of the carrier.

Waybilling.

1873. The revenue or other waybill prepared from the shipping order, and transfer billing to connecting carrier for dangerous articles in list, paragraph 1807 and for other articles not in the list, but properly offered for shipment as dangerous articles, must properly describe these articles by classification or tariff name and state for less-than-carload shipments the color of label applied. For carload shipments they must show the kind of placard applied. The shipper's certificate must be in possession of the initial carrier when these indorsements are made on original billing.

The revenue waybill must also have plainly stamped or written at the top the words "INFLAMMABLE" or "ACID."

1874. (*a*) The card waybill, the running slip, the envelope containing waybills or other billing for any loaded car which under these regulations should bear the inflammable or the acid placard or for an empty tank car protected by such placards, must have plainly stamped or written across the top in letters not less than ½ inch in height the words "INFLAMMABLE" or "ACID."

(*b*) In the absence of information to the contrary, empty tank cars not bearing placards, may be assumed not to require them. (See par. 1903 (*b*)).

(*c*) For tank cars not loaded, the billing must show the word, "Empty."

1875. When the lading is not dangerous, but is properly described by one of the doubtful names, distinguished by an asterisk in the list, paragraph 1807, the billing for the car must be indorsed "No placard required."

1876. When the initial movement is over a switching line the switching ticket, and copies thereof, prepared by the shipper, or by the carrier under the shipper's written authority, must bear the shipper's certificate and the placard notation prescribed by paragraph 1867; for other switching movement the switching ticket prepared by a railway employee must show the kind of placard required.

1877. Shipments of dangerous articles offered by connecting lines must comply with these regulations, and the revenue waybill, freight bill, manifest of lading, card waybill, switching order, or other billing, must bear the label and placard endorsements prescribed by paragraphs Nos. 1873 and 1874.

Handling packages.

1889. Carriers must keep on hand an adequate supply of labels. Lost or detached labels must be replaced from information given on revenue or other waybill.

1890. In handling packages containing dangerous articles at stations and to and from cars care must be taken to prevent their falling or being broken. Heavy packages should be trucked, rolled, or moved by use of skids or other satisfactory devices and must not be dropped from trucks, platforms, or cars. Planks for rolling trucks from platforms to cars should have beveled ends.

Loading.

1891. (*a*) A box car placarded "INFLAMMABLE," or known to contain inflammable liquids, must not be entered with a lighted lantern, torch, or other fire until both car doors have been opened and sufficient time allowed for ventilation and escape of any vapors. The presence of these vapors will generally be indicated by characteristic odors. When leakage is continuous ventilation will not remove the danger. The leaking package should be located and removed, using electric lights or waiting for daylight.

(*b*) Packages protected by labels must be loaded so that they can not fall to the car floor and so that other packages of freight can not fall on them. Packages protected by white and yellow labels, respectively, must not be loaded in the same end of a car or stored near each other.

1892. (*a*) Carload lots of "strike anywhere" (friction) matches must be loaded as compactly as possible to avoid motion, especially lengthwise the car. Car doorways should be boarded on the inside to keep packages from contact with the doors, and the inside lining of the car should be supplemented when necessary by strips nailed to the car and close enough together to keep the boxes from being jammed against the studding and broken by high pressures on small areas. The strongest dimension of the box should be loaded lengthwise the car.

(*b*) When packages are loaded over or near exposed draft bolts or kingbolts the bolts should be covered by boards not less than 1 inch thick, or by empty wooden boxes of proper size, and the ends of these boards should be beveled to prevent the end of a box resting against the end of the board and being crushed by it. Partial layers of boxes should be interlocked with the lower layers as described in Bureau of Explosives Pamphlet No. 6, for loading packages of explosives. The cars used should be made secure against the entrance of sparks or rain and should be the strongest cars available. Under no condition should any car be loaded with more than 48,000 pounds gross weight of "strike anywhere" matches.

(*c*) Less-than-carload lots of matches should be carefully loaded so that they can not fall to the car floor and so that other packages of freight can not fall on or injure them. Whenever practicable the packages of matches should be placed to facilitate ready removal from the car in case of fire. A smoking box of matches should not be broken open; the fire will cease of itself if air can be kept from it.

1893. (*a*) Carboys of acid or other corrosive liquids must be so blocked and braced that they can not change position during transit when being handled with reasonable care.

NOTE.—For convenient forms of trucks for handling acid carboys see B. E. Pamphlet No. 6.

(*b*) When less-than-carload shipments are loaded with other freight the carboys must be placed near the doorways and must have wooden strips not less than 1 inch thick nailed to the car floor about 6 inches from the carboy boxes. These strips must be arranged so that the liquid from a broken carboy will drain toward the doorway and outside the car. The space between the strips and the floor braces, or blocking used for staying the carboy boxes, must be covered with at least 1 inch thickness of clean and dry sand (not sawdust or other combustible material).

(*c*) Cylinders containing compressed gases must be loaded on their sides, except when packed in boxes or crates or when placed in suitable permanent racks in cars, or braced as prescribed by paragraph 1863 (*b*).

1894. (*a*) Carload lots of crude camphor, cotton, cotton batting, cotton wadding, cotton waste, excelsior, fiber, hay, hemp, jute, oakum, oil-well cables, rags, sawdust, sulphur, tow, or straw, or other

articles liable to be ignited by sparks, as well as unslacked lime and calcium carbide, both of which must be protected from water, should when practicable be loaded in tight cars, with doors stripped, and when practicable these cars must not be placed next to cars placarded "EXPLOSIVES."

(*b*) Lime, coke, chipped bone, ashes, or similar substances must not be loaded in cars until thoroughly cooled.

(*c*) Charged electric batteries must be well insulated to prevent short circuits and must not be loaded or stored with explosives.

1865. (*a*) Empty barrels, kegs, or drums previously used for the shipment of an inflammable or corrosive liquid must have their filling and vent holes properly closed. They should be loaded in open or stock cars when practicable. Labels are not required on such packages, and cars should not be placarded, but lighted lanterns or other open-flame lights should be kept away.

(*b*) Empty carboys in less-than-carload lots and in carload lots to be unloaded by carriers must be supplied with stoppers and neck protectors well secured, and they must be loaded with their necks up. Whenever practicable they should not be loaded in cars containing valuable or perishable freight.

Placards and handling cars.

1901. Carriers must keep on hand an adequate supply of placards. Placards will be furnished by carriers to shippers for attachment to cars loaded by them.

1902. The carrier must verify the attachment of the proper placard by the shipper as soon as a car requiring a placard is accepted by the carrier for transportation. A daily record showing the initials and numbers of all cars placarded must be kept on file at originating and transfer stations.

1903. (*a*) When the lading requiring the placard is removed from cars placards must be removed, except that "INFLAMMABLE" placards must remain on tank cars moved as "empty" until such cars are known to have been properly cleaned with steam or reloaded with a substance that does not require the placard. As provided in paragraph 1941 (*b*) acid placards which are painted or stenciled on tank cars may be allowed to remain.

(*b*) Many fatal accidents have resulted from using lanterns or lighted matches to examine the interior of empty tank cars or in using hot rivets to repair unsteamed tank cars, which may contain inflammable vapors even when the previous lading was not of flash point below 80° F. Only incandescent electric lights should be used for this examination.

(*c*) Dome covers on empty tank cars must be securely placed in proper position before the cars are offered for movement.

1904. A carrier must not move from a station, yard, or siding a

car known to require placards until the proper placards are attached. Placards lost in transit must be replaced by the carrier.

1905. (*a*) Tank cars placarded "INFLAMMABLE" must be placed in trains if possible at least 5 cars from the engine and 5 cars from the caboose, but must not be placed next to a car placarded "EXPLOSIVES." When length of train does not permit this they must be placed as near the middle of the train as practicable; and in all cases carriers must see that their train crews are informed of the presence and location of such cars in the train.

Special care must be taken to avoid rough treatment and unnecessary switching of placarded tank cars.

(*b*) The carrier must see that its representative in charge of a freight train makes a thorough check of the cars bearing inflammable, acid, or explosive placards with the billing, to see that all placards required are attached and those not required are removed.

1906. When cars protected by "INFLAMMABLE" placards are received or held in yards, particularly at night, the carrier must see that all necessary precautions are taken to prevent accidents. These precautions must include provision for quickly isolating them in case of fire.

1907. In classification yards and in switching it must be determined by inspection and trial that such a car has its brakes in first-class order before a draft containing it is cut; and a tank car placarded "INFLAMMABLE" must not be started down a ladder track, incline, or hump until the preceding car has cleared the ladder. It also must clear the ladder before another car is allowed to follow.

1908. (*a*) Cars bearing "INFLAMMABLE" placards and cars adjacent to them must be watched with extra care to discover hot journals.

(*b*) All available opportunities must be utilized, by noting the odor of inflammable liquids or otherwise, to discover leaks in these cars and to protect leaking cars from ignition of contents by flame of inspectors' lanterns or torches, by burning fuses, by switch lights, by switch-thawing flames, by fires on side of track, by coals from locomotives passing over a roadbed strewn with leakage, or otherwise. (See par. 1956.)

1909. Whenever a tank car loaded with an inflammable liquid is discovered in transit in a leaking condition all unnecessary movement of the car must cease until the unsafe condition of the car is remedied. Every possible precaution necessary to prevent ignition of the contents must be observed and the general precaution indicated in paragraphs 1951 to 1957, inclusive, should be followed.

1910. When fire occurs in charcoal in transit, water should not be used if it is practicable to locate and remove the material on fire, since wet charcoal is much more liable to ignite spontaneously, and the fire can not be stopped permanently by the use of water.

1911. Whenever a car bearing the acid placard is discovered in transit with packages in leaking condition, all unnecessary movement of the car must cease and at the first opportunity an examination must be made of the lading, and if practicable any broken or leaking packages of nitric or mixed acids should be removed promptly to prevent fire. Any acid remaining on the car floor or on surrounding packages should be washed away with a plentiful supply of water.

1912. In unloading tank cars, the following rules should be observed:

(*a*) The dome cover should be unscrewed by placing a bar between the dome-cover lug and the knob; the valve-rod handle in the dome should be moved back and forth a few times, to ascertain if the valve is properly seated, and if seated, the valve cap should then be removed with a suitable wrench, having a pail to catch any liquid that may be in the valve nozzle.

(*b*) The unloading connection should be securely attached to the valve nozzle, and valve should then be raised by working the valve-rod handle. The dome cover should be placed over the dome opening, resting on a piece of wood, to allow air to enter the tank. The dome cover should not be replaced while unloading, as this action may result in collapse of the tank. After tank is unloaded the valve should be sealed, valve cap and dome cover replaced. "INFLAMMABLE" placards must not be removed.

(*c*) When necessary to unload tank cars from the dome, or when necessary to transfer the contents of one tank car through the outlet valve into the dome of another tank car, care should be observed to see that all of the connections are tight and that the pipe or hose, when inserted into the open manhole for pumping or filling purposes, is surrounded by wet burlap to prevent the escape of vapors and to avoid igniting them.

Inflammable placard.

1913. A placard of diamond shape, printed on strong, thin white paper for pasting on tank cars, containing an inflammable liquid and on strong tagboard for tacking to wooden cars or to wooden boards of suitable size attached for this purpose to metal box cars or tank cars, measuring 10¾ inches on each side, and bearing in red and black letters the following inscription, must be securely attached to each outside end and to each side door of a car containing one or more packages protected by the red or the yellow diamond label.

Acid placard.

1941. (*a*) There must be securely attached to each ouside end and to each side door of a car containing one or more packages protected by the white diamond label, a placard of diamond shape on strong, thin, white paper for pasting on tank cars and on strong tag board for tacking to wooden cars or to wooden boards of suitable

size attached to tank cars, measuring 8½ inches on each side, and bearing in black letters the following inscription:

* * * * * * *

(*b*) If a tank car is used exclusively for the carriage of articles for which the white label is required, the words "ACID—HANDLE CAREFULLY," of the size and style as shown on the standard placard may be stenciled or painted in black letters on a white diamond on the car, in lieu of the placard. When this is done such placards must be kept fresh and plainly legible.

(*c*) When dangerous articles requiring the white label are properly loaded in a car requiring the inflammable placard, it will not be necessary to attach acid placards to the car.

1943. Inflammable or acid placards will not be required on express or baggage cars in charge of an express messenger or railway employee and moving in passenger trains, or on electric or gasoline motor cars in charge of an employee of the carrier, and which are run independently of cars carrying passengers.

1944. Placards must conform to standards, and samples will be furnished by the chief inspector of the Bureau of Explosives on request.

In case of a wreck.

1946. In case of a wreck involving a car containing inflammable freight it should be assumed that packages are broken and that leakage has occurred which may cause fire if lighted lanterns or other flames are taken into or near these cars. As much of the train as possible should be moved to a place of safety. A car containing inflammable freight should be opened for ventilation and packages protected by red labels and cylinders of compressed gases should be removed to a safe place. Substances spilled from broken packages protected by yellow label should also be carefully removed. Cylinders of compressed gases may be exploded if they are exposed to fire or struck a sharp blow and the flying fragments would then be dangerous. Inflammable liquids spilled from broken packages or tank cars should be well covered with dry earth before a lighted lantern, torch, or an engine is used in the vicinity. Acids spilled in cars should be covered with dry earth and the car floor should be thoroughly swept.

Leaking tank cars.

1951. Action in any particular case will depend upon existing conditions, and good judgment will be necessary to avoid disastrous fires on the one hand and the useless sacrifice of valuable property on the other.

Volatile (or combustible) liquids, such as gasoline, naphtha, etc., in large quantity and spread over a large surface will form vapors that will ignite at a considerable distance, depending on the kind and quantity of liquid and the direction and force of the wind. Many of the liquids regarded as safe to carry under ordinary conditions and

transported in tank cars without the inflammable placard, should still be treated as dangerous in handling a wreck.

1952. When oil cars are leaking, all lights or fires near them that can possibly be dispensed with should be extinguished or removed. Incandescent electric lights or portable electric flashlights should be used when available. Whenever practicable, the work of handling a wrecked oil car should be done during daylight.

1953. Lanterns necessarily used for signaling should be kept on the side from which the wind is blowing and at as high an elevation as can be obtained. The vapors will go with the wind but not against it. The ash pan and fire box of a locomotive or steam derrick, especially on the side of a wrecked or leaking tank car toward which the wind is blowing, is a source of danger. Wrecks involving oil cars should in no case be approached with lighted pipes, cigars, or cigarettes.

1954. Effort should be made to prevent the spread of oil over a large surface by collecting it in any available vessels or draining it into a hole or depression at a safe distance from the track. When necessary, trenches should be dug for this purpose.

It is not safe to drain inflammable oil in large quantities into a sewer, since vapors may thus be carried to distant points and there ignited. Care should be exercised also not to permit oil to drain into streams of water which may be used by irrigation plants or for watering stock. Dry earth spread over spilled oil will decrease the rate of evaporation and the danger. A stream of oil on the ground should be dammed and dry earth be thrown on the liquid as it collects.

1955. Sudden shocks or jars that might produce sparks or friction should be avoided. When possible, jack the wrecked car carefully into position after removing other cars and freight that might be injured by fire. Only as a last resort, to meet an emergency, should a wrecked tank car be moved by dragging, and when this is done all persons should be kept at a safe distance.

1956. No unnecessarw attempt should be made to transport a damaged tank car from which inflammable liquid is leaking. Saftey in short movements may be secured by attaching a vessel under small leaks to prevent spread of inflammable liquid over tracks. Cover tracks at intervals in rear of a moving car with fresh earth to prevent fire overtaking the car. Keep engines away; also spectators who may be smoking. If wrecked or derailed, and not in a position to obstruct or endanger traffic, it should have its leak stopped as far as possible and be left under guard until another tank car or sufficient vessels can be provided for the transfer of the liquid, which should be transferred by pumping when practicable.

Even a tank that is not leaking is liable to be ruptured by use of slings, and the slipping of chain slings may produce sparks. Saving of the contents of the tank is not as important as the prevention of fire.

1957. An empty or partially empty tank car, with or without placards, is very liable to contain explosive gases, and lights must not be brought near it.

1958. Water will not quench an oil fire. If the fire can not be smothered by use of earth, steam, or wet blankets, effort should be concentrated on confining it and saving other property.

1959. Should a leak occur by the breakage or displacement of the unloading valve and pipe at the bottom of the tank car, it may be stopped by removing the dome cap on the top of the tank and dropping the plunger into the plunger seat, as a shock sufficient to damage the outlet valve and pipes may have unseated also the plunger.

The dome cover should be unscrewed by placing a bar between the dome-cover lug and knob. The dome cover should not be hammered, and should not be unscrewed until the absence of vapor pressure in the tank is verified by lifting the safety valve.

To ascertain whether the valve is properly seated, the valve rod handle in the dome should be moved back and forth a few times. The following drawing indicates the general plan covering valve rod and unloading or discharge valve:

* * * * * * *

APPENDIX.

Act of March 4, 1909, effective January 1, 1910.

By an act entitled "An act to codify, revise, and amend the penal laws of the United States," approved March 4, 1909, to take effect and be in force on and after the 1st day of January, 1910, the act entitled "An act to promote the safe transportation in interstate commerce of explosives and other dangerous articles, and to provide penalties for its violation," approved May 30, 1908, is repealed, and the following sections of said act to codify, revise, and amend the penal laws of the United States are substituted therefor:

SEC. 232. It shall be unlawful to transport, carry, or convey any dynamite, gunpowder, or other explosive between a place in a foreign country and a place within or subject to the jurisdiction of the United States, or between a place in any State, Territory, or District of the United States, or place noncontiguous to but subject to the jurisdiction thereof, and a place in any other State, Territory, or District of the United States, or place noncontiguous to but subject to the jurisdiction thereof, on any vessel or vehicle of any description operated by a common carrier which vessel or vehicle is carrying passengers for hire: Provided, That it shall be lawful to transport on any such vessel or vehicle small-arms ammunition in any quantity, and such fuses, torpedoes, rockets, or other signal devices, as may be essential to promote safety in operation, and properly packed and marked samples of explosives for laboratory examination, not exceeding a net weight of one-half pound each, and not exceeding twenty samples at one time in a single vessel or vehicle;

but such samples shall not be carried in that part of a vessel or vehicle which is intended for the transportation of passengers for hire: Provided further, That nothing in this section shall be construed to prevent the transportation of military or naval forces with their accompanying munitions of war on passenger equipment vessels or vehicles.

SEC. 233. The Interstate Commerce Commission shall formulate regulations for the safe transportation of explosives, which shall be binding upon all common carriers engaged in interstate or foreign commerce which transport explosives by land. Said commission, of its own motion, or upon application made by any interested party, may make changes or modifications in such regulations, made desirable by new information or altered conditions. Such regulations shall be in accord with the best known practicable means for securing safety in transit, covering the packing, marking, loading, handling while in transit, and the precautions necessary to determine whether the material when offered is in proper condition to transport. Such regulations, as well as all changes or modifications thereof, shall take effect ninety days after their formulation and publication by said commission and shall be in effect until reversed, set aside, or modified.

SEC. 234. It shall be unlawful to transport, carry, or convey liquid nitroglycerin, fulminate in bulk in dry condition, or other like explosive, between a place in a foreign country and a place within or subject to the jurisdiction of the United States, or between place in one State, Territory, or District of the United States, or a place noncontiguous to but subject to the jurisdiction thereof, and a place in any other State, Territory, or District of the United States, or place noncontiguous to but subject to the jurisdiction thereof, on any vessel or vehicle of any description operated by a common carrier in the transportation of passengers or articles of commerce by land or water.

SEC. 235. Every package containing explosives or other dangerous articles when presented to a common carrier for shipment shall have plainly marked on the outside thereof the contents thereof; and it shall be unlawful for any person to deliver, or cause to be delivered, to any common carrier engaged in interstate or foreign commerce by land or water for interstate or foreign transportation, or to carry upon any vessel or vehicle engaged in interstate or foreign transportation, any explosive, or other dangerous article, under any false or deceptive marking, description, invoice, shipping order, or other declaration, or without informing the agent of such carrier of the true character thereof, at or before the time such delivery or carriage is made. Whoever shall knowingly violate, or cause to be violated, any provision of this section, or of the three sections last preceding, or any regulation made by the Interstate Commerce Commission in pursuance thereof, shall be fined not more than two thousand dollars, or imprisoned not more than eighteen months, or both.

SEC. 236. When the death or bodily injury of any person is caused by the explosion of any article named in the four sections last pre-

ceding, while the same is being placed upon any vessel or vehicle to be transported in violation thereof, or while the same is being so transported, or while the same is being removed from such vessel or vehicle, the person knowingly placing, or aiding or permitting the placing, of such articles upon any such vessel or vehicle, to be so transported, shall be imprisoned not more than ten years.

TESTIMONY IN 773548/9.

THE U. S. GENERAL APPRAISERS.

In the matter of protests 773548/9 of the Benzol Products Co.

BEFORE BOARD 1.

NEW YORK, *May 5, 1915.*

Present:

General Appraiser SULLIVAN, acting chairman.
General Appraiser BROWN.

Appearances:

Frederick W. Brooks, jr., counsel for the importers.
Chas. D. Lawrence, special attorney for the United States.

Mr. Brooks. In these two cases the merchandise consists of two tank cars, one in each shipment, each containing nitric and sulphuric acid, both of which acids are provided for in the free list in paragraph 387. They were assessed as a mixture of chemicals or a chemical mixture or compound under paragraph 5 at 15 per cent ad valorem. We claim they are free of duty under the eo nomine provision in paragraph 387.

THOMAS LYNTON BRIGGS, called as a witness on behalf of the importers, having been duly sworn testified as follows:

By Mr. Brooks:

Q. What has been your practical experience and education in chemistry? A. Studied chemistry in Germany, England, and Switzerland.

Q. For how long a period? A. Practically three years.

Q. What has been your practical experience? A. About thirty-six years.

Q. Where and in what capacities? A. As a chemist, superintendent of aniline dyes and dyestuffs and manufacture of acids.

Q. For whom? A. For the General Chemical Company.

Q. How long have you been with the General Chemical Company? A. Fourteen years.

Thomas Lynton Briggs.

Q. Prior to that what was your connection and with what firm, what line of business? A. I have been for about three years with an acid manufacturing concern and the rest of the time in dyestuffs and a few other things.

Q. How long have you been practically familiar with and had experience with acids and other chemicals? A. I have been familiar with them practically the whole of my thirty-six years' experience.

Q. The General Chemical Company are the shippers and the Benzol Products Company are the consignees in these cases. Do you also act in an advisory capacity to the Benzol Products Company? A. Yes, sir.

Q. Make reports on articles as advisor of the company as to the goods they use? A. Yes.

Q. Have you personal knowledge of the two shipments involved in this case, the sulphuric and nitric acid, how they were shipped and by whom they were shipped? A. They were shipped by the General Chemical Company to the Benzol Products Company.

Q. Do you know why it is that the sulphuric acid was added to the nitric acid in this case?

Mr. Lawrence. Objected to as immaterial, why they were mixed.

Mr. Brooks. It is material to this extent. Here we have a combination of two acids that are each free of duty, and the reason for their being combined in this case it is material to show, if there is any reason for doing it, whether it is for commercial purposes or whether as a necessity for the transportation of the article.

Gen. Appr. Sullivan. Is it your contention that the combined article is free?

Mr. Brooks. It is.

Gen. Appr. Sullivan. And the Government contends it is not.

Mr. Brooks. Exactly

Gen. Appr. Sullivan. It is not sufficient to show it is a combination, then the rest is a matter of law?

Mr. Brooks. I think your honors must have evidence showing the reason they were put together. There is a peculiar situation here.

Objection overruled. Exception.

A. Because nitric acid can not be shipped in the strength above 72 per cent except in special metal containers. It can not be shipped in tank cars, according to the ruling of the Interstate Commerce Commission.

Q. So under the Interstate Commerce rulings it is impossible to transport nitric acid of this strength alone? A. In tank cars, yes. It is impossible to ship nitric acid in tank cars.

Mr. Brooks. This merchandise came overland.

Q. Do you know the value of the sulphuric acid in each of these

shipments as compared with the nitric acid? A. The value is about three per cent of the total value.

Q. The value of the sulphuric acid is three per cent of total value? A. Yes, sir.

Mr. Brooks. I call your honors' attention to the fact that on invoice 4360 the sulphuric acid is invoiced at $79.50 and the nitric acid at $2,508.56, and in the invoice 4394 the sulphuric acid is invoiced at $91.80 and the nitric acid at $2,409.41.

Q. Is that article as imported put to any use in its condition as imported? A. No, sir.

Q. What is the use to which it is put ultimately? A. In the nitration of benzole to make nitrobenzol, which is the raw material for aniline.

Q. What is done to it to make it suitable for that use? A. A considerably larger proportion of sulphuric acid is added to it before it is used.

Q. What is that proportion? A. Well, the average would be about six and a half times as much sulphuric as is already in the mixture is added to it before it can be used.

Q. What is the purpose or benefit of adding this sulphuric acid to the nitric acid in the amount and the way in which it is added to this as imported—what is the reason for doing it? A. It prevents the action of the nitric acid upon the metal of the car. It protects the nitric acid from reacting on the metal of the tank car.

Q. Acting as a protector of the nitric acid? A. Yes, sir.

By Gen. Appr. Sullivan:

Q. Is that only introduced for the purpose of transportation? A. Yes, sir.

Q. The sulphuric acid is added for the one purpose, to assist in the transportation? A. Yes; in this particular case.

By Mr. Brooks:

Q. As to the proportion in which it is imported here, is that an amount that is necessary to make it safe for transportation? A. Yes; I should say that is about the per cent considered the proper quantity to add.

Q. For that purpose, for making it safe in transportation? A. Yes, sir.

Q. In compliance with the Interstate Commerce Commission's rulings? A. Yes, sir.

By Gen. Appr. Sullivan:

Q. When you use the article do you separate the sulphuric acid? A. No, sir.

Q. Permit it to remain? A. It remains where it is. It is unnecessary to remove it. We can do so.

Thomas Lynton Briggs.

By Mr. Brooks:

Q. But you add six and a half times as much again? A. Yes, sir.

Q. Are these acids in the condition as imported ever used commercially? A. I think not, in that particular strength.

Q. There would be no commercial advantage to mix in that particular strength? A. No, I think not.

Q. Does your company manufacture sulphuric and nitric acids? A. Yes.

Q. They are very large manufacturers of the those two, are they not? A. Yes, sir.

By Mr. Lawrence:

Q. I understand you use this product without separating the nitric from the sulphuric acid? A. Yes, sir.

Q. Can you use it or do you use it for the identical purposes which you heretofore used nitric acid for? A. We never use nitric acid alone.

Q. Well, you have been using nitric acid for a good many years? A. Yes, sir.

Q. And sulphuric acid? A. Yes, sir.

Q. When you use them, do you use them separately or in combination? A. Are you speaking of the purposes for which this shipment was used?

Q. No; having in mind the general use of nitric acid and sulphuric acid. What are those generally used for? A. A great variety of purposes.

Q. What are the most common uses? A. You mean alone?

Q. Yes. A. Sulphuric acid is used for pickling iron, making superphosphates, and for a vast number of other things.

Q. What is nitric acid commonly used for? A. By itself, used largely for making chemicals containing nitric acid.

Q. What is the common use of this mixture here? A. That particular mixture is only used for nitration purposes when diluted with more sulphuric acid.

Q. Before you had combined it in this way what would you use for that purpose? A. We used nitric acid and sulphuric acid in the same proportions we do now.

Q. In the same proportions? A. That we do now.

Q. Then to put this to its intended use what do you have to do with it? A. Have to mix more sulphuric acid.

Q. So you eventually get the same combination you would if you imported them separately? A. Oh, yes.

Q. This could be imported in carboys without being mixed—the nitric acid could be imported in carboys without being mixed with sulphuric acid? A. Yes.

Q. It is only for bringing it in in this bulk form that you have mixed the two acids? A. Yes, sir.

Q. Are they combined chemically or mechanically? A. Mechanically.

Q. They are both chemicals, the sulphuric acid and the nitric acid, of course? A. Yes.

By Mr. Brooks:

Q. That carboy you spoke of is a glass carboy? A. Glass carboy.

Q. Nitric acid alone can be imported in a wide glass carboy? A. In a glass carboy, yes.

By Geo. Appr. Sullivan:

Q. Is the expense an item that they won't impart it in a carboy? A. Yes, sir.

By Geo. Appr. Brown:

Q. What is the effect of putting in this acid? You said you put it in to protect the metal of the tank car. How does it do that—chemically or physically or how? A. I think it would be both chemical and physical.

Q. What is the effect? A. I should think it coats the metal, gives it a coating of insoluble sulphate of iron.

Q. The sulphuric acid protects the tank car from the mixture? A. I think that is probably what happens. It is hard to say, why it does it, but it does it.

Q. That would cause damage to the tank car? A. Oh, yes; certainly.

By Geo. Appr. Sullivan:

Q. The sulphuric acid counteracts the effect of the nitric acid? A. Yes, sir.

By Geo. Appr. Brown:

Q. It does that you say; it is pure speculation how it does it? A. Yes, I don't know.

Q. You really don't know how it does it? A. No.

By Mr. Brooks:

Q. At any rate the Interstate Commerce Commission would not permit free nitric acid of this strength to be imported alone? A. No.

Q. Or to be carried alone? A. No.

Q. Except in glass carboys? A. That is all.

Case submitted. Ten days granted to counsel after the testimony is written up to file briefs.

TESTIMONY IN 793171, &c.

THE U. S. GENERAL APPRAISERS.

In the matter of C. J. Tower et al., protests 799171, C. J. Tower; 799172, do.; 797324, Wm. A. Bird.

CLEVELAND, *March 28, 1916.*

Before General Appraiser McCLELLAND.

Appearances:

Martin T. Baldwin, Esq., special attorney for the United States.

W. T. CASHMAN, appearing as a witness on behalf of the importers, being duly sworn, testified as follows:

By General Appraiser McClelland:

Q. There are two protests in the name of C. J. Tower and the other in the name of W. A. Bird. What is their relation to the importations? A. Customs brokers, both of them.

Q. What is the name of the importer? A. Louis Nixon, Bonhampton, N. J. Grasselli & Co. is the shipper.

Q. Are you familiar with the merchandise covered by these three protests? A. I am assistant secretary of the company. Know that they are shipped; that's all. These two particular ones—I haven't the third before me, so that there are only two we can consider.

Q. Are these the two cases that are in the name of Tower? A. Yes, sir.

Q. Did you have anything to do with the purchase of the merchandise covered by these protests? A. No; nothing at all. We paid the duty.

Q. Did you see the merchandise at any time? A. I did not; no.

Q. You paid duty at the rate of 15 per cent, and you claim that it should have been admitted free? A. Yes, sir.

Q. What do you know about the merchandise personally that warrants you in saying that it should have been free? A. I know it is mixed acid, which is a combination of sulphuric——

Q. You say that you never saw it? A. I never saw it.

Q. How do you know about it? A. Technically I know—— No; I don't know anything about it. I did not know that you wanted that kind of evidence. I thought this was more or less informal. To take a man from Hamilton, Ont., over here just to testify that we shipped that acid——

Q. You have to prove your case here just the same as in any other court. If you had a case up in the county court room you would get ready. The Government has got your money and you have to prove your issue. A. You mean it will be necessary for me to have some witnesses here from the Canadian plant to say it is——

Q. I do not know what will be necessary. A. I thought the question was, what was mixed acid. It is not a question——

Q. You say you do not know much about it except what somebody else told you? You have never seen it? A. No.

Q. Personally you do not know anything about it and cannot testify. Have you anybody here? A. Nobody that actually saw it. The superintendent that is making it, he did not see it any more than he saw a thousands others that went out. But if that is the evidence you want I would like to have the matter continued.

General Appraiser McClelland. What do you say about continuing these cases?

Mr. Baldwin. No objection.

General Appraiser McClelland. Continued.

Mr. Cashman. I understood, if you will excuse me, that this was an informal hearing.

Cases continued.

THE U. S. GENERAL APPRAISERS.

In the matter of C. J. Tower et al., protests 799171, C. J. Tower; 799172, 797324, Wm. A. Bird.

Cleveland, *September 26, 1916.*

Before General Appraiser McClelland.

Appearances:

Curie, Smith & Maxwell, by Albert McC. Barnes, Esq., for importers.

Harry M. Farrell, Esq., special attorney for United States.

Mr. Barnes. The merchandise in these cases consists of a mixture of nitric and sulphuric acid shipped in tank cars from the Canadian plant of the Grasselli Chemical Co. to a purchaser in the United States. The mixture contains different proportions of sulphuric and nitric acid, but the proportions are in the neighborhood of half and half; that is, within five or six per cent one way or the other. The entry was liquidated at 15 per cent under par. 5 as chemical mixture, and it is claimed to be free of duty under 387 as nitric and sulphuric acid.

WILLIAM T. CASHMAN, called as a witness by the importers, being duly sworn, testified as follows:

By Mr. Barnes:

Q. What is your position with the Grasselli Chemical Co. A. Assistant secretary.

Q. Do you have knowledge of their various transactions between the Canadian plant and the American home office here in Cleveland? A. Yes.

Q. Look at the papers in protest 799171 and state who C. J. Tower is. A. C. J. Tower is our customs broker at Niagara Falls.

Q. The entry is made in his name as broker for the Grasselli Chemical Co.? A. Yes, sir.

Q. Will you state what the merchandise is, the subject of that entry and protest? A. Mixture of sulfuric and nitric acid.

Q. Is that a mixture which you ship frequently? A. Yes.

Q. To whom was it shipped? A. Shipped to Louis Nixon, Bonhampton, N. J.

Q. Sold to Nixon by the Grasselli Company? A. Yes, sir.

Q. Shipped direct from your Canadian plant to him? A. Yes, sir.

Q. Now look at protest 799172 and state if that is made in your behalf. A. This was made in our behalf by C. J. Tower, customhouse broker, Niagara Falls, and covers another shipment.

Q. Sold to the same person? A. Sold to the same person, the same material, mixture of sulfuric and nitric acid.

Q. Look at protest 797324, in the name of Wm. A. Bird, and make the same statement. A. Wm. A. Bird is the customhouse broker at Buffalo who handled this particular entry for us.

Q. Sold to the same persons? A. Sold to the same persons.

Q. Same material? A. Same material; mixture of sulfuric and nitric acid.

Q. The proportions of nitric acid and sulfuric acid is the same in all?

Mr. Farrell. That is objected to on the ground that it has not been shown that this witness is a chemist or that he knew the proportion.

Mr. Barnes. All right. Strike it out.

Q. Was there any contract or agreement between the Grasselli Chemical Company and Louis Nixon as regards the percentages of the two acids? A. Yes.

Q. Were you familiar with the terms of that contract? A. I was.

Q. Did you draw that contract yourself? A. I did.

Q. What were the terms as regards the percentages of sulfuric and nitric acid?

Mr. Farrell. I object to that as immaterial, the contract of the merchandise.

General Appraiser McClelland. It would not necessarily follow that the percentages were the same in the merchandise. There can be no objection to his stating the contract.

Exception.

A. Not more than 45.5 sulfuric acid, not less than 49 per cent nitric acid.

Q. What was to be the degree of purity or strength of the two acids? A. There was to be a total acidity of 95 per cent calculated as $H^2SO^4HNO_3$.

Q. What was the percentage of the nitric acid? A. In the contract?

Q. Yes, sir. A. Not less than 49 per cent.

Q. No; I mean the percentage of strength of the nitric acid to be used in this mixture? A. No; the strength of the nitric acid is included according to the strength of the mixture.

Q. So that there was nothing said about that in the contract? A. No.

Q. Were these shipments about which you have testified in fulfillment or partial fulfillment of that contract? A. Yes.

Q. Was the merchandise received by Louis Nixon & Co. and paid for under that contract?

Mr. Farrell. That is objected to.

A. It was paid for.

Mr. Farrell. It has not been shown that the merchandise received was the merchandise in the contract.

Gen. Appr. McClelland. It can not do any possible harm.

Objection overruled. Exception.

A. It was paid for, I know.

Q. In that contract what is the merchandise called? A. A quantity of mixed sulfuric and nitric acids, as provided herein.

Q. Has it any name of its own commercially other than this——

Mr. Farrell. That is objected to on the ground that no foundation has been laid for commercial designation.

Gen. Appr. McClelland. Objection overruled. Answer yes or no.

Q. (continuing. Mixture of nitric and sulfuric acid? A. It is familiarly called mixed acids.

Mr. Farrell. I move to strike that out as not responsive.

Gen. Appr. McClelland. No; he asked you whether it has any other commercial name than the one you have read on the contract?

A. No.

By Mr. Farrell:

Q. You are the assistant secretary of the Grasselli Chemical Co.? A. Yes, sir.

Q. In answer to counsel's questions regarding the contract with Louis Nixon you have read from the copy of the contract? A. Yes.

Q. You know that is a correct copy? A. I also am attorney for the company and drew the contract.

Q. You, of course, did not see the merchandise covered by these protests? A. I did not.

Q. That is all.

By Gen. Appr. McClelland:

Q. Are you prepared to say whether the relative percentages of the merchandise delivered under these orders to Nixon were the same as those named in the contract? A. I have—I could not say that of my own knowledge—somebody here to testify to that. I know that he paid for them because his contract is completed in full.

By Mr. Barnes:

Q. Did he make any objection to the effect that you did not live up to the terms of it?

Mr. Farrell. Objected to as immaterial.

Gen. Appr. McClelland. It might have been better than the contract and it would not have been objectionable.

J. C. VONDERAU, called as a witness by the importers, being duly sworn, testified as follows:

By Mr. Barnes:

Q. What is your business? A. I am superintendent of the Hamilton works of the Grasselli Chemical Co.

Q. Are you familiar with all shipments made by the works of the acids, sulfuric and nitric mixed? A. Yes, sir.

Q. Will you look at the invoices in each of these protest numbers, as given above, and state whether you supervised the mixing and the shipment of those cars? A. Yes.

By Gen. Appr. McClelland:

Q. How are you able to identify the shipments from an examination of these papers? A. By the car numbers and the dates.

By Mr. Barnes:

Q. Now, what was the merchandise shipped in those cars?

Mr. Farrell. That is objected to. It has not been shown that the witness is familiar with what the merchandise was. It is shown that the cars were under his supervision.

Gen. Appr. McClelland. The very first question and answer showed that.

Objection overruled. Exception.

Last question repeated by the stenographer.

A. It was a mixture of sulfuric and nitric acid.

Q. Can you ship nitric acid alone in tank cars?

Mr. Farrell. That is objected to.

A. No; not of that strength.

Q. Why? A. Because it is against the rules of the Interstate Commerce Commission.

Q. What was the strength of the nitric acid used in this mixture?

Mr. Farrell. That is objected to, the witness has not been shown to have any familiarity with the strength of nitric acids.

Gen. Appr. McClelland. Qualify him.

Mr. Barnes. Strike that question out.

Q. Included within your duties as superintendent of the plant in Canada, are you obliged to become familiar with the strength of both nitric and sulfuric acid shipped by you? A. Yes, sir.

By Gen. Appr. McClelland:

Q. How do you inform yourself of the relative strength? A. Well, both by instrument and by chemical test.

Q. Do you make the tests yourself? A. I do not make them myself; no.

Q. Have you any knowledge of the strength of either of these acids except as some one tells you or reports to you? A. The test by instruments; I can make those myself; I have made them.

Q. Did you in these particular cases? A. Well, I could not say whether I did this very case.

Q. The strength varies from time to time? A. The strength varies, but the strength must be the same to get that mixture.

Q. In order to get this mixture what do you say that the respective strength ought to be? A. The gravity of the nitric ought to be about 48.6 Baumé or 48.7 Baumé, and the sulfuric is about 1.84 specific gravity. The specific gravity of the nitric would be about 1.5.

Q. If you did not have those percentages you would not get results? A. No; you could not get the mixture.

By Mr. Barnes:

Q. Now, is it possible to ship nitric acid of 1.5 strength in any metal container? A. No; it is not possible.

Q. Is it possible to ship sulfuric? A. Yes; it is possible to ship sulfuric.

Q. Now please explain what is done to these two acids in order to put them into the condition as shipped? A. They are mixed in certain proportions.

Q. By weight? A. By weight.

Q. Does the proportion follow the specification that may be sent to you? A. Yes, sir.

Q. Did you follow those proportions in these cases? A. We did.

Q. Will you state what the proportions were in each of these three shipments, taking the first, 799171? A. The proportions were practically all the same. The proportion is not less than 49 per cent nitric and 45.5 sulfuric.

Mr. Farrell. 59?

A. 45.5 sulfuric; not less than 49 nitric.

Q. By weight? A. No, by percentage.

By Gen. Appr. McClelland:

Q. Suppose the percentages were greater? A. You mean in the mixture?

Q. Yes. A. Then, of course, they would have to be brought down to where they belong. You see we would not make acid any stronger than we would need because that is an extra expense.

Q. If the percentages were greater in the mixture would the mixture serve the purpose for which it was designated? A. Well we were not supposed to ship it any stronger.

Q. That does not quite answer my question. A. In that case it probably—we would have to reduce it, weaken it.

Q. It would not serve the purpose would it? A. That I don't know but I go by my instructions.

Q. That is to say, you are charged with the responsibility of not allowing it to go out above those percentages? A. Above nor below; it must be up to those percentages.

By Mr. Barnes:

Q. These acids were at those percentages? A. They were within the limit.

Q. Now, how is this mixture made?

Mr. Farrell. That is objected to. It has not been shown that he has any familiarity with the making of it.

Gen. Appr. McClelland. I see no objection to stating it.

Objection overruled. Exception.

A. We take a certain amount of sulfuric by weight and a certain amount of nitric by weight and mix them.

Q. Do you put anything else in it? A. Nothing whatsoever.

Q. Do you put it through any process of any kind that changes it in any way? A. Not at all.

Mr. Farrell. That is objected to. It has not been shown that he is familiar with the change.

Gen. Appr. McClelland. I do not think it is material in any way.

Mr. Barnes. That is all.

By Mr. Farrell:

Q. You are superintendent of the Grasselli Chemical Company's plant at where? A. At Hamilton, Ont.

Q. That is where these shipments were made? A. Yes, sir.

Q. Do all shipments from that plant come under your supervision? A. Yes, sir.

Q. Do you have to inspect all shipments to see that they comply with your instructions? A. Yes, sir.

Q. You receive those instructions from the home office here? A. Yes, sir.

Q. You don't know the purposes for which this mixture is to be used, do you? A. No.

Q. You are not a chemist? A. No.

Q. How long have you been superintendent of this plant at Hamilton? A. A little over four years.

Q. You stated, I believe, that nitric acid can not be shipped in tank cars; upon what information and knowledge do you base that statement? A. I base that statement on the rulings of the Interstate Commerce Commission.

Q. That is, they won't let you ship nitric acid in tank cars into the States, nitric acid alone? A. Not of that strength.

Q. What do they require?

Mr. Barnes. I will offer these rules in evidence.

Gen. Appr. McClelland. If you can state in a general way the conditions of the Interstate Commerce Commission, state them; if not, just let it go.

A. The highest strength that is allowed to ship is specific gravity of 1.49. According to this statement this acid was a gravity of 1.5 and probably just a trifle over.

Q. However, the reason you said that nitric acid can not be shipped in tank cars is based on the Interstate Commerce Commission? A. Yes, sir.

Mr. Farrell. That is all.

Mr. Barnes. That is all.

WILLIAM T. CASHMAN, recalled as a witness by the Importers, having been duly sworn heretofore, testified as follows:

By Mr. Barnes:

Q. Do you have difficulty shipping nitric acid alone? A. Certain strengths.

Q. Has it been necessary for you to familiarize yourself with the official rules of the Interstate Commerce Commission on that subject? A. Yes.

Q. I show you a pamphlet published by the Bureau for the Safe Transportation of Explosives and other dangerous articles and ask

you if you will point out in that the rules of the Interstate Commerce Commission covering the shipments of nitric and sulfuric acids?

Mr. Farrell. I object to that on the ground that it is immaterial.

Objection overruled. Exception.

A. This contains the regulations prescribed by the Interstate Commerce Commission July 2nd, 1914, effective October 1, 1914; in Par. 157 it specifically refers to nitric acid.

Gen. Appr. McClelland. That is enough.

Q. What are the regulations covering the shipment of nitric acid as contained in those rules?

Gen. Appr. McClelland. He has referred to.

Mr. Barnes. Strike that question out. I offer this in evidence.

Gen. Appr. McClelland. It is a published document.

Mr. Farrell. I object on the ground that it is immaterial in this case.

Gen. Appr. McClelland. You brought it out, didn't you?

Mr. Farrell. I asked the witness what the basis of his knowledge was; he stated it was based on the Interstate Commerce Commission ruling, but I did not refer to the document or ask him anything further.

Gen. Appr. McClelland. You have referred to it.

Mr. Barnes. I offer it in evidence.

Gen. Appr. McClelland. Yes; admit that one paragraph.

Mr. Farrell. Exception.

Pamphlet marked in evidence "Ex. 1," etc.

Q. Has it been possible, therefore, for you to ship nitric acid of the strength used in this mixture?

Mr. Farrell. That is objected to, whether it has been possible for him to ship.

Q. Under these rules.

Mr. Farrell. I object to that.

Objection overruled. Exception.

A. No; we could not.

Q. Do you sell both nitric and sulfuric acid separately? A. Yes.

Q. In the United States? A. Yes.

Q. From your Canadian plant is it necessary to combine nitric acid of 1.5 strength with something else in order to ship it? A. Yes; of that strength.

Q. With what do you combine it? A. Sulfuric acid.

Q. Now, does it make any commercial difference whether you ship so many pounds of nitric acid in one shipment, so many pounds of sulfuric in another or mix it together before it is shipped?

Mr. Farrell. That is objected to on the ground that it is immaterial whether it makes any commercial difference.

Gen. Appr. McClelland. What has this got to do with it?

Mr. Barnes. I want to show, if Your Honor please, that the Grasselli Company would in fact rather sell this merchandise separately than mix it, because they charge nothing extra for it and it is not a commercial article when it is mixed.

Gen. Appr. McClelland. A question of their profits is not material at all.

Objection sustained. Exception.

Q. Is this article as imported, this mixed acid, a commercial article or is it simply a method of selling and shipping the two acids?

Mr. Farrell. Objected to. No basis has been laid for this witness to state any commercial dealings.

Gen. Appr. McClelland. The witness may comprehend it, I do not.

Mr. Farrell. I have no objection to the question.

Objection overruled. Exception.

A. We sell sulfuric acid——

Gen. Appr. McClelland. No; wait a minute. (Mr Barnes' question repeated by the stenographer.) Is it a commercial article or do you just combine it as it is for the purpose of selling it? That is my understanding of the question.

Mr. Barnes. Yes, sir.

A. In some cases we combine it; in some cases we have a contract where we sell so much nitric and so much sulfuric.

By Gen. Appr. McClelland:

Q. No; this article as it is, having in mind the relative percentages forming the combination, is it in the condition in which we find it, a commercial article? A. You mean by that——

Q. I do not know; it is what you mean. A. As we ship it, yes; if you mean by that——

Q. It is not what I mean. Is it in the form to use by the consumer? A. Yes; it is in the form in which he uses it.

Q. It is not what I mean. A. It is in the form he uses it exactly.

By Mr. Barnes:

Q. Is this mixture of these two acids an article which is called for regularly in the trade?

Mr. Farrell. That is objected to. No foundation has been laid for this man's familiarity with the trade in acids.

General Appraiser McClelland. Do you have to do with the sales of your company at all?

A. I visé all the contracts. I draw many hundreds of mixed acid contracts.

Objection overruled. Exception.

Question objected to repeated by the stenographer.

A. Yes; in different proportions, however.

Q. Do you mix those two acids primarily for the purpose of supplying the trade or primarily for the purpose of transportation of the nitric acid?

Mr. Farrell. That is objected to.

Q. In Canada?

Objection overruled. Exception.

A. Primarily for transportation purposes.

Q. Is it better for your concern commercially to make the mixture in the United States than it would be in Canada if it were not for transportation?

Mr. Farrell. Objected to as immaterial.

Objection sustained.

Q. Do you receive orders for nitric and sulfuric acid as two separate commodities?

General Appraiser McClelland. He has already answered that and says that they have frequently sold them.

Mr. Barnes. That is all.

By Mr. Farrell:

Q. The percentage in which these acids were shipped were based on the contract you had with Mr. Nixon? A. Yes, sir.

Mr. Farell. That is all.

Mr. Barnes. That is all.

WALTER G. GRAVES, called as a witness by the importers, being duly sworn, testified as follows:

By Mr. Barnes:

Q. What is your position with the Grasselli Chemical Co.? A. Manufacturing department, manufacturing chemist.

Q. Are you head of the chemical department of that concern? A. I am one of the chemists; yes. Not graded that way.

Walter G. Graves.

Q. What has been your training as a chemist? A. Why, I was educated at Yale and took a post-graduate course in the Sheffield Scientific School. I then went into the manufacturing of chemicals for about twenty-five years; more than that.

Q. Are you familiar with the mixture of sulfuric acid and nitric acid containing approximately 45.37 sulfuric and 50.08 of nitric acid, which is imported by the Grasselli Company from their Canadian plant?

Mr. Farrell. That is objected to on the ground that the question assumes facts not proven in this case.

Objection sustained.

Q. Are you familiar with the merchandise as imported in these three cases of which you have heard the testimony this morning? A. Yes.

Q. Have you during your experience with the Grasselli Company made tests of such mixtures as a chemist? A. Yes.

Q. Are you familiar with that mixture as it is generally imported? A. Yes.

Q. Have you from time to time made tests and examinations of chemical mixtures of different kinds? A. Yes.

Q. What would you include within the term chemical mixture speaking from the standpoint of the chemist? A. I would say a chemical mixture was a mixture of ingredients which react with each other forming——

General Appraiser McClelland. Are you asking him to define a chemical mixture? You asked him what he would include. If you are asking him to define a chemical mixture, that is one thing; if you are asking him what is included in a chemical mixture, that is another thing.

Mr. Barnes. I mean what general classes he would include within it. I will change the question.

Q. Will you define a chemical mixture from the standpoint of a chemist? A. A chemical mixture would be a mixture of ingredients in which there would be a chemical reaction, breaking up the original composition of the two individuals that were brought together, which would produce one or two new products which were of a different molecular composition and were essentially different in nature.

Q. Can you give an example of such a mixture? A. I would say, take for instance, silver and iron finely divided. If you put those together, grind them up in a mortar; do anything that you are a mind to in the way of mixing and take a magnet and draw it over the top and draw out the iron. It is unchanged. Put a solvent on it, dissolve the silver; it comes out unchanged. The two exist. They just mix in a comminuted form. They exist side by side. They neither lose their individuality or inherent qualities. But the moment——

Q. Is what you have described what you know as a chemical mixture or mechanical mixture? A. Mechanical mixture.

Mr. Farrell. I move that the answer be stricken out as not responsive.

General Appraiser McClelland. Yes; strike it all out. You were not asked to define a mechanical mixture.

Q. Now go back to the other question and give us an example of a chemical mixture. A. Well, we take silver and iron——

Q. No; some other. A. All right; take two acids, then. If you want a chemical mixture, put sulfuric acid with ammonium and you would destroy the original elements, forming ammonium sulphate. The acid has lost its acid qualities; no longer sour to the taste; no longer acts on iron. The ammonium no longer has the ammoniacal—no longer any ammoniacal smell to it or any of the properties of ammonia. If you evaporated that you get a solid, whereas both your ingredients were liquids. If you would evaporate the ammonia it would have all gone off; nothing left. If you evaporated that before they were mixed, if you had evaporated the sulfuric acid that would have gone off in sulfuric acid gas. These two things have been changed essentially in character.

Q. Do you know of such a term as a mechanical mixture of acids or chemicals or anything of that kind? A. Yes, sir.

Mr. Farrell. I object to that on the ground that it is immaterial.

Objection overruled. Exception.

Q. Will you define a mechanical mixture? A. A mechanical mixture is a mixture where two or more ingredients are put together, and they are simply adjacent to each other; they exist unchanged alongside of each other; their essential characteristics remain; the molecular structure remains.

By General Appraiser McClelland:

Q. No union of the component parts? A. No union of the component parts.

By Mr. Barnes:

Q. Now, this mixture which we have in these protests of sulfuric and nitric acid, is that a chemical mixture or a mechanical mixture?

Mr. Farrell. That is objected to on the ground that it has not been shown that this witness is familiar with these various shipments.

General Appraiser McClelland. Yes.

Q. Well, I will have to change that slightly; strike that question out, please. Based on what you have examined and tested of the

various shipments of mixed sulfuric and nitric acid received from the plant, the Grasselli plant in Canada, would you say that the difference—would you say that the percentages of the various—of the two acids made any difference in—would make any difference in determining whether they were mechanical or chemical mixtures?

Mr. Farrell. That is objected to on the ground that it has not been shown that this witness has made any tests.

Objection overruled.

Exception.

Last question repeated by the stenographer.

Mr. Barnes. Strike that question out.

Q. From the tests which you have made in the past of these mixed acids, would you say that it made any difference—that the percentage of the two acids made any difference in determining whether it was a mechanical or chemical mixture? A. No. Nitric acid and sulfuric acid have no chemical affinity for each other.

By General Appraiser McClelland:

Q. Have you ever made an analysis of this merchandise? A. That merchandise; no; I never saw that.

Q. I mean merchandise—— A. Of mixed acids.

Q. (Continuing.) Of relative proportions comparable with this? A. I don't think I have made an analysis of the exact—of those exact proportions; but sulfuric and nitric in any proportions are—have no affinity for each other.

By Mr. Barnes:

Q. So that the tests which you have made, even though the percentages were entirely different from those in this case—your testimony will be no different as respecting their chemical affinity? A. It does not make any difference; the chemical affinity is unchanged.

By General Appraiser McClelland:

Q. They keep separated even in the tanks? A. They keep separated whether it contained forty or thirty or twenty or whatever the percentage.

By Mr. Barnes:

Q. If a mixture contains 45.37 per cent of sulfuric acid and 50.08 of nitric acid, and nothing else, would you consider it to be a mechanical or chemical mixture?

Mr. Farrell. Objected to as assuming facts not proven.

Objection overruled. Exception.

A. I would consider it a mechanical mixture.

By General Appraiser McClelland:

Q. Is each of these acids in itself a distinct chemical? A. Each is a distinct chemical; yes.

By Mr. Barnes:

Q. If nitric and sulfuric acids are mixed can they be again separated into nitric acid and sulfuric acid mechanically? A. They can. You can boil off the nitric acid, separate the nitric the same as any other liquids.

Q. When it is heated the nitric distills off? A. When it is heated the nitric distills off.

Q. What is the sign for sulfuric acid, the chemical sign; what is the formula? A. H_2SO_4.

Q. What is the sign for nitric acid? HNO_3.

Q. Has H_2SO_4 plus HNO_3 any chemical significance or any chemical result?

Mr. Farrell. I object to that as immaterial.

Objection overruled. Exception.

A. If you had H_2SO_4 it could stand before the HNO_3 the same as corn would stand beside potatoes.

Q. So you can not add—— A. Except that they are liquids, of course.

Q. Can you add H_2SO_4 and HNO_3 and get any chemical result? A. No.

By Mr. Farrell:

Q. Doctor, in one of your answers you defined a chemical mixture; I don't want you to repeat it, but you gave the definition for chemical mixture, didn't you? A. Yes.

Q. Would your answer be the same for a chemical compound? A. I would probably distinguish—I would distinguish between a chemical mixture and a chemical compound in this way: That a chemical mixture is the putting together of chemicals which mixture would produce a chemical compound; that is, a new—something different from what had been there before.

Q. How would that differ from your definition of a chemical mixture? A. There probably—I would say—they are practically—shy, a chemical compound is the result of a chemical mixture. That is the way I would express it.

Q. In the books of authority on chemistry, are the terms chemical compound and chemical mixture used interchangeably? A. Why, yes,—yes, they are.

By General Appraiser McClelland:

Q. Is there a chemical compounding in all cases where there is a

chemical mixture? A. Yes, I should say that that—the essence of a chemical mixture was that it produced a new compound, a new product.

By Mr. Farrell:

Q. If you mixed two chemicals of any character together in a vat, would that mixture produce a chemical compound? A. No, sir, two chemicals of any description: no.

Q. That is, it would not in all cases? A. The mere mixing of two chemicals would not.

Q. That is all.

By General Appraiser McClelland:

Q. What distinction, if any, do you recognize between a chemical compound and a chemical combination? A. Why a chemical—no, I should say that they were the same, the same product.

Q. Do you recognize any difference between a chemical combination and a chemical mixture? A. No. That is, if I may explain there a bit: that is, of course, if you are putting a chemical, if you put any two different chemicals together they form a combination or compound, but to bring about a chemical mixture would mean that you decompose the originals and transfer them into something else, break up the molecular structure.

Q. In your judgment simply putting of two chemicals together does not necessarily make a chemical mixture? A. I would not—not the way I take it.

Mr. Barnes. I would like to have this case continued to New York for the purpose of proving by the Louis Nixon Company of New Jersey the receipt of this merchandise in the condition in which it was shipped.

General Appraiser McClelland. That is not disputed, is it?

Mr. Farrell. If it is continued for all purposes I will agree.

General Appraiser McClelland. Do you have to negative a point that has not been raised?

Mr. Barnes. No. Importers rest.

General Appraiser McClelland. What about the Government?

Mr. Farrell. Submitted.

General Appraiser McClelland. Submitted by both sides.

Mr. Barnes. I would like to have an opportunity of filing a memorandum in this case, 2 weeks after the testimony is transcribed.

General Appraiser McClelland. So ordered.

[Endorsed:] No. 1974. United States Court of Customs Appeals. Filed May 2, 1919. Arthur B. Sheldon, clerk.

TESTIMONY IN 803766.

THE U. S. GENERAL APPRAISERS.

In the matter of protest 803766 of Nonnabo Chemical Company.

Before General Appr. COOPER.

PROVIDENCE, R. I., *Sept. 26, 1916.*

Appearances:

Joseph F. Lockett, Esq., counsel for protestants.

John J. Mulvaney, Esq., special attorney, for the United States.

Gen. Appr. Cooper. What is the issue in this case?

Mr. Lockett. If your honor please, the issue in this case concerns an importation in a tank car consisting of sulphuric acid and nitric acid in about equal proportions. It was assessed under paragraph 5 which provides for chemical mixtures and chemical compounds, medicinal preparations, etc., at 15%. Free entry is claimed in the protest under paragraph 387, which provides for the free entry of nitric acid and of sulphuric acid; and then alternately under 385 at 10% as a nonenumerated manufactured article.

Now a motion was made at the last docket for the issuance of a commission, and interrogatories and cross-interrogatories were filed in due course. The commission has been returned, and under the rules of the Board I notice that it is encumbent upon the person offering the deposition to read it at the trial of the case. Of course time can be saved if Mr. Mulvaney will agree, or will state any objections he may have to any interrogatories which have been offered.

Mr. Mulvaney. I am prepared to state those objections now, and make my motion.

Mr. Lockett. Well, for the sake of bringing the matter to a focus I will offer the direct interrogatories and answers of the commission of J. C. Vonderau. Those might be argued before we take up the cross-interrogatories.

Mr. Mulvaney. We object to the answer to the 5th direct interrogatory which purports to contain an analysis of the material, because upon its face the answer shows it to have been hearsay, and not the result of an analysis made by the witness himself. We ask that the answer to the fifth direct interrogatory be stricken from the commission.

The witness in response to the 7th direct interrogatory responded that the mixture of these two acids, sulphuric acid and nitric acid, did not constitute or create a chemical compound. We ask that that answer be stricken from the record because, as appears from his second and third direct interrogatory, and third cross-interrogatory, the witness is not a registered chemist and was not qualified to testify as to whether a

mixture of two materials such as this did make a chemical compound. The witness gives as a reason, in his answer to the eighth direct interrogatory, for his statement that they were not a chemical compound, that the components could be separated. In his answer to the 14th interrogatory, and the third cross-interrogatory he admitted that this separation takes place by heat, and that the result of the heating is that the nitric acid is distilled off leaving only the sulphuric acid.

The points made in the commission, or the issues created by the direct interrogatories were that nitric acid of the strength shown by the analysis here, if any has been shown, could not be carried in any vessel of any kind, either in a metal tank car, or even, as the witness stated in answer to one question, in a glass vessel. That being so, it was urged that the sulphuric acid was mixed with the nitric acid so that it may be safely transported in these vessels without destroying the vessels. If that be so, then the separation of the materials which results in a destruction of the nitric acid leaving only the sulphuric tends to demonstrate absolutely that the sulphuric acid is not mixed with the acid for that purpose, and that a chemical compound has been created which can only be destroyed by the destruction of one of the elements; and we ask that in that view, all the testimony on direct and cross with respect to these points be stricken from the commission.

Mr. Lockett. I move that all the remarks of Government counsel be stricken out except so far as they are particularly pertinent to this matter. I think Mr. Mulvaney digressed in the form of an argument which had better be prepared in a brief, then specifically point out objections to the questions and answers. It seems to me that if conclusions which Government counsel can draw from the deposition are allowed to go into the record in this way——

Genl. Appr. Cooper. It only goes in as argument; it does not go in as evidence.

Mr. Lockett. That is true, but it confuses the record somewhat as to the specific objections. However, I won't press that if your honor so rules.

Genl. Appr. Cooper. I overrule your motion to strike Government counsel's remarks from the record.

Mr. Lockett. As I understand it, the practice is that on these objections they have to be ruled upon by the full Board. Is that correct?

Mr. Mulvaney. That is my understanding of the practice.

Genl. Appr. Cooper. Well, heretofore, or rather up to six months ago I ruled on everything presented to me in the trial of cases, but there was a question raised as to whether or not power existed in a single general appraiser to rule upon a question like the one presented to the court here. That matter was taken to the Board, but the full Board has never decided that the single general appraiser did not have full power to act upon all motions presented to him in the trial of a case.

Mr. Lockett. That being so, I will read direct interrogatory number 5.

Genl. Appr. Cooper. Before doing that I want to know if there is any objection to the single General Appraiser deciding this question? If there is I will refer it back to the Board.

Mr. Mulvaney. I have no objection to your honor deciding it.

Mr. Lockett. I have no objection.

Mr. Mulvaney. Of course, I do not feel that on appeal later on I should be bound by your honor's ruling.

Mr. Lockett. I will read interrogatory number 5, which has been objected to by Mr. Mulvaney: "If your answer to the preceding interrogatory be in the affirmative"—which interrogatory number 4 I had better read first. Interrogatory 4 is as follows: "State whether or not you have any knowledge of the shipment of sulphuric and nitric acid which were mixed together in tank car ATX # 423 and shipped on or about January 12, 1916, to the Nonnabo Chemical Co., Phillipsdale, R. I.?" The answer is: "Yes; I have knowledge of that shipment." Interrogatory 5: "If your answer to the preceding interrogatory be in the affirmative state, if you know, the percentage of nitric acid and the percentage of sulphuric acid shipped in tank car ATX # 423 and how you obtained this knowledge." Answer: "The shipment contained 49.64 per cent of nitric acid, 45.6 per cent of sulphuric acid. I obtained that knowledge by chemical analysis made in the company's laboratory, which analysis I know to be correct."

Genl. Appr. Cooper. With respect to that answer I will overrule the motion of the Government.

Mr. Mulvaney. Exception.

Mr. Lockett. Number 7: "State whether or not the mixing of sulphuric acid and nitric acid in car ATX # 423 created any chemical compound."

Mr. Mulvaney. The basis of the objection of the Government to that answer is that he admitted on cross-examination that he was not a registered chemist, nor was he otherwise qualified.

Genl. Appr. Cooper. I think that would go largely to the weight and value of the testimony. I will overrule the objection.

Mr. Lockett. Number 8: "If your answer to the preceding interrogatory be in the negative, state your reasons therefor." Answer: "The proof that this was a mechanical and not a chemical mixture is that the nitric and sulphuric acids could be separated."

Genl. Appr. Cooper. I will overrule the objection to that.

Mr. Lockett. Number 14, direct interrogatory: "If your answer to the preceding interrogatory be in the affirmative, state whether or not you could recover the same proportions of nitric acid and sulphuric acid shipped in tank car ATX # 423, and if so, by what process?" Answer: "Yes: it can be done by

the process of distillation. By heating the mixture the nitric acid distills off and the sulphuric acid remains."

Genl. Appr. Cooper. I will overrule the objection to that answer.

Mr. Lockett. The importer objects to cross-interrogatory 4, which reads as follows: "State, if you know, whether the said nitric or sulphuric acids were concentrated or diluted before or after they were put or mixed in the said tank car and also the specific gravity of the acids before and after they were put or mixed in said tank car." My basis of objection is that the question is immaterial and irrelevant to this issue.

Genl. Appr. Cooper. It is cross-examination. I will overrule the objection.

Mr. Lockett. Of course, your honor allows us exceptions?

Genl. Appr. Cooper. Yes. It is understood that counsel have exceptions to all these rulings.

Mr. Lockett. Cross-interrogatory 6: "Do you know to what manufacturing use the said sulphuric and nitric acids were put and in what condition they appeared when used for the said manufacturing use? If so, what?" Then in that connection I should like to read the answer to that interrogatory: "I have no positive knowledge of this: I can only surmise that they were used for the manufacture of explosives." I have two grounds of objection: First, it is immaterial; second, the witness admits that he has no knowledge.

Genl. Appr. Cooper. Then it would not be valuable testimony. I will overrule the objection, however.

Mr. Lockett. Cross-interrogatory 7: "State, if you know, the amount of the sulphuric and nitric acid shipped in said tank car and whether the mixture of these chemicals in the proportions contained in the said car especially fitted them for a specific use. If so, what?" Answer: "The total weight contained in tank car ATX # 423 being 51,660 pounds, the sulphuric acid will amount to 24,230 pounds and the nitric acid to 27,430 pounds. In my opinion, a mixture of that kind would be used for making explosives." That is objected to on the grounds of immateriality and incompetency.

Genl. Appr. Cooper. I will overrule the objection.

Mr. Lockett. That disposes of the deposition.

Genl. Appr. Cooper. Any oral testimony?

Mr. Lockett. Yes; if you please.

ELLERY T. ROE, called as a witness for the protestants, being duly sworn, testified as follows:

By Mr. Lockett:

Q. Your name is what? A. Ellery T. Roe.

Q. By whom are you employed? A. At present by the O'Bannon Corporation.

Ellery T. Roe.

Q. Where are they located? A. West Barrington.

Q. How long have you been employed by the O'Bannon Corporation? A. Since March 19, 1912.

Q. What have been your duties all that time? A. Assistant chemist.

Q. You are familiar with this importation, are you, which consists of a tank car of mixed acids which was shipped from the Grasselli Chemical Company, of Ontario, to Phillipsdale? A. Yes, sir.

Q. What work did you do in connection with obtaining a sample of this merchandise? A. Why, I came to Providence here to supervise the taking of the sample.

Q. Did you make out a card at that time? A. Well, I made out a card of data concerning that car previous to that time.

Q. What did you put on the card when you first made it out? A. The number of the car, the date it was shipped, and the place it was shipped from.

Q. And then you came to Providence with that card? You met here with some Government official? A. I met a Government official. I didn't have that particular card with me.

Q. Was there a piper at all with you? A. Yes, sir.

Q. He took a sample? A. Yes, sir.

Q. You checked the number on the card with the number of the car? A. Yes, sir.

Q. What did you do with the samples which were obtained from the car? A. We took three samples. Two samples were turned over to the official from the customhouse that came with me, and one I took with me to our laboratory at Phillipsdale.

Q. What was on the label? A. The one taken out by me had simply the number of the car—the letters and number of the car.

Q. Where did you put that? A. I put it on a tray or bench in the laboratory.

Q. That is where you keep similar bottles, is it? A. Yes, sir.

Q. Then an analysis was made by Mr. Edmonson? A. Yes, sir.

Q. Did you copy that analysis? A. I keep the results of the analysis; copied the results of the analysis on to the card.

Q. I show you a card here which contains car number, date of arrival, date of shipment, place of shipment, date received, date returned, and the perentage of sulphuric acid and per cent of nitric acid. N_2O_4, what is that? A. Lower oxides of nitrogen.

Q. I will ask you if that card was made out by you, in your handwriting? A. Yes, sir.

Mr. Lockett. I offer that card as Exhibit 1, temporarily, until this record has been proven up.

Mr. Mulcahey. If it is proven to be a true copy of the record, I have no objection.

Q. You copied this card from the record book A. Yes, sir.

Q. That is a record book kept by the importers? A. Yes, sir.

Q. And contains analyses of various tank cars? A. Yes, sir.

The card was marked Exhibit 1, etc.

Mr. Lockett. I think that is all.

By Mr. Mulvaney:

Q. What is that book? A. Record of the Nannobo Chemical Company.

By Mr. Lockett:

Q. At the time of this analysis you were associated with the Nonnabo Company? A. Yes, sir.

Q. This is the record from which you copied? A. Yes, sir.

By Mr. Mulvaney:

Q. What is the difference between the O'Bannon Corporation and the Nonnabo Chemical Company?

Mr. Lockett. I object to that.

Genl. Appr. Cooper. On what grounds? It seems there are two corporations.

Mr. Lockett. The young man stated he worked for the Nonnabo Corporation at the time the sample was taken. The O'Bannon Corporation seems to be another plant, engaged in another sort of business. I have no objection to going into it, however.

Genl. Appr. Cooper. I will overrule the objection.

The question was repeated by the stenographer.

A. I couldn't say just what the difference was.

Q. Do you work for both corporations? A. I do not. I worked for the O'Bannon Corporation, and then I was transferred to the Nonnabo and sometime afterwards transferred back to the O'Bannon.

Q. Who are you working for now? A. March, 1912, to April, 1915, and since then, since the middle of February of this year, I have been with the O'Bannon Corporation.

Q. Since February of this year? A. Yes, sir.

Q. But at the time of this importation you were in the employ of the Nonnabo Chemical Company? A. Yes, sir.

Q. How old are you? A. Twenty-nine.

Q. Are you a graduate chemist? A. No, sir.

Q. Have you any degree at all? A. No, sir.

Q. What are your duties with the O'Bannon Corporation? Are you chemist? A. Supervising routine work at that time, in the laboratory.

Q. You didn't make any analyses yourself? A. I have, yes, sir.

Q. How often? A. I couldn't say that.

Mr. Mulvaney. That is all.

CHARLES J. EDMONDSON, called as a witness for the protestants, being duly sworn, testified as follows:

By Mr. Lockett:

Q. By whom are you employed? A. Nonnabo Chemical Company, Phillipsdale.

Q. How long have you been employed by them? A. Since June 15, 1915.

Q. Since June, 1915? A. Since June, 1915.

Q. Did you ever study chemistry? A. Yes, sir.

Q. Whereabouts? A. Rhode Island State College.

Q. How long did you study chemistry at the Rhode Island State College? A. Two years.

Q. Ever since you left the Rhode Island State College you have been associated with the Nonnabo Chemical Company? A. Yes, sir.

Q. What are your particular duties in connection with the Nonnabo Chemical Company? A. At present I am assistant chemist.

Q. What do you do as assistant chemist? A. Supervise the analysis of acids used in the Nonnabo Chemical Company.

Q. What were your duties during the first part of the year 1916? A. I was analyzing acids for the Nonnabo Chemical Company.

Q. Analyzing the acids? A. Yes, sir.

Q. What do you mean by that? A. Finding the percentage of nitric acid and the percentage of sulphuric acid in the samples of the acids they used.

Q. Do you have to have any particular knowledge of chemistry to enable you to do that?

Mr. Mulvaney. I object to that. That is a matter for the court and not for this witness.

Mr. Lockett. A man certainly has some idea of his own qualifications.

Mr. Mulvaney. Qualifications should be proved by facts. The question calls for a conclusion of the witness.

Genl. Appr. Cooper. Objection overruled.

Question repeated by the stenographer.

A. Yes, sir.

Q. To what extent?

Mr. Mulvaney. I object to that. That is a matter of opinion upon which authorities may differ. This witness has not been shown to possess qualifications which will enable him to pass upon it.

Mr. Lockett. He says he studied chemistry at the State College——

Mr. Mulvaney. For two years.

Charles J. Edmondson.

Mr. Lockett. A man who has studied chemistry for two years has some conception of his own capacity to make analyses.

Mr. Mulcahey. He has no conception of the knowledge necessary to pass upon certain things in chemistry that would be required of a man who has completed a course in chemistry and had considerable experience.

By Genl. Appr. Cooper:

Q. How long ago did you attend this school you speak of? A. Two years.

Q. What did you study? A. The chemistry course.

Q. In the chemistry course what articles did you handle? A. General chemistry, organic chemistry, quantitative and qualitative analysis.

Q. Liquids? A. Yes, sir.

Q. Since leaving that school have you been pursuing the same occupation? A. Yes, sir; with the Nonnalo Chemical Company.

Genl. Appr. Cooper. I think he is qualified to answer.

The last two questions were repeated by the stenographer, as follows:

"Q. Do you have to have any particular knowledge of chemistry to enable you to do that?

"A. Yes, sir.

"Q. To what extent?"

"A. You have to be able to recognize several of the elements used in the analysis of the acid, also be able to tell the difference between a beaker and a burette, or something like that. It is necessary to have an idea how to go about the analysis.

Q. State whether or not you have ever taught anyone else to make analyses. A. Yes, sir.

Q. Whether or not they ever had any previous knowledge of chemistry, if you know. If you don't know, say so. A. I don't know.

Q. Will you state what the system is at the Nonnalo Chemical Company with reference to the samples of mixed acids; that is, where are they put and in what sort of containers? A. When a tank car arrives in the yard it is opened and a sample is taken and put into a bottle and brought into the laboratory and put in a tray for that specific purpose. A sample is then taken from that and analyzed by somebody in the laboratory.

Q. The previous witness testified that he took a sample of this, or was present when a sample from this shipment was taken, and brought it to your office and put it in the box provided for that purpose. Did you see that sample? A. Yes, sir.

Q. With that number, ATX 423? A. Yes, sir.

Q. State whether or not you made an analysis of the sample to determine the amount of sulphuric acid and nitric acid in that particular lot. A. I took and made an analysis.

Q. You did make an analysis? A. Yes, sir.

Q. I show you here this book and ask you to state what that book is. A. That contains records of all the analyses of all the tank cars used by the Nonnabo Chemical Co.

Q. Tank cars containing what? A. Mixed acids.

Q. I show you here a record which is headed A. T. X. 423 Fort. Acid 1-28-16, which purports to contain an analysis of the acid in that car, and ask you if all the figures and writing upon that page are yours? A. Yes, sir.

Mr. Lockett. Mr. Mulvaney, in order to save carrying that book over to New York, this card, Exhibit 1, has been offered in evidence as a transcript of that record.

(Mr. Lockett and Mr. Mulvaney compare the card Exhibit 1 with the book referred to.)

By Mr. Mulvaney:

Q. This card, Exhibit 1, professes to be only a copy of the summary of these other figures? A. Yes, sir.

Mr. Mulvaney. I propose to examine him upon these figures, and I think the card should be an exact copy of the page. Suppose you furnish an exact copy of the page on another paper?

Mr. Lockett. All right.

Mr. Mulvaney. Then it can be marked Exhibit 2.

Genl. Appr. Cooper. Then make an exact copy of that page of the book.

Mr. Lockett. It cannot be very well done now.

Mr. Mulvaney. Have it done under your supervision and mail to me.

Mr. Lockett. That is satisfactory.

Genl. Appr. Cooper. It will be marked Exhibit 2 when received.

NOTE.—The copy of the page referred to was subsequently received by the stenographer and by him marked Exhibit 2, etc.

Mr. Lockett. That will be a copy of the record of the Nonnabo Chemical Company with reference to that analysis, the analysis of car ATX 423?

Mr. Mulvaney. Yes, sir.

By Mr. Mulvaney:

Q. Did you receive a degree from that school? A. No, sir.

Q. What is length of the chemical course in that school. A. Four years.

Q. How old are you? A. Twenty-two.

Q. How long after you left school did you go to work for the

Nonnalso Chemical Company? A. I left school one day and went to work the next day.

Q. So that you have been out of school only since June, 1918? A. Yes, sir.

Q. And you left that school before your course was half finished? A. Just half finished.

Q. How many times before you analyzed this consignment had you analyzed mixtures of sulphuric and nitric acids? A. I will say an average of three samples a day.

Q. All the while working for the Nonnalso Chemical Company? A. Yes, sir.

Q. How many times did you analyze mixtures of nitric acid and sulphuric acids during your two years in this State College? A. I didn't get any of this work—exactly the same work.

Q. Was your analysis of this cargo quantitative or qualitative? A. Quantitative.

Q. Did you know that the quality of both acids might be in issue here? A. No, sir.

Q. I assume, without criticism, that you made the analysis you were directed to make? A. Yes, sir.

Q. Are the percentages given in the summary here, 47.1 sulphuric and 48.41 nitric, by weight or by volume? A. That is by weight.

Q. What kind of weight? A. Avoirdupois.

Q. In other words, you took the weight of the sample and took the weights of the components of the sample that was taken from the car? A. No, sir; I weighed out the sample and then found the percentage of nitric acid and the percentage of sulphuric acid in the sample.

Q. How did you weigh the sample? A. On a scale balance.

Q. How could you determine the weights of those two components? A. The sample is weighed out—three samples (I will correct myself) are weighed out. Two are run as a check to determine the percentage of acid as sulphuric acid, and the third——

Q. Percentage by weight? A. Yes, sir. The third sample is run to determine the percentage of nitric acid in terms of nitrogen. From that data the percentage of nitric acid can be calculated, and then from that data the percentage of sulphuric acid can be calculated.

Q. Are these two materials of the same specific gravity? A. I don't know.

Q. Wouldn't it be necessary for you to determine that, or to know that, before you could determine by weight the percentages of the components of a material such as this? A. I don't know.

Q. Tell me, please, what the first figures, 18.4899, and the figure, 16.9787 in the book mean? A. That figure, 16.9787, represents the weight of a bottle, a glass-stoppered bottle, into which 1.5112 grams of the sample of acid were put.

Q. How did you get that 1.5112? A. This bottle weighed

16.9787, it was weighed on a balance. A sample of acid of unknown weight was put into the bottle. The bottle was weighed again and the weight found to be 18.4899, the difference being 1.5112.

Q. In what? In grammes? A. Grammes; yes. That represents the weight of the acid in the sample.

Q. Now, then, underneath that 1.5112 you have other figures. What do they represent? A. To explain how those figures come in sequence it is necessary to know the amount of sodium hydroxide used to neutralize that many grams of acid, which in this case it took 40.31.

Q. What do you mean by neutralizing? A. The way to neutralize an acid, an equal amount of base has to be added to just balance.

Q. What do you mean by balance? Do you mean in strength or relation to each other? A. In relation to each other. When that point is reached—a certain substance known as an indicator can be used, and when the indicator changes to the color of the solution it indicates that that point is reached. These figures here, these two and this one, are logarithms, this being the logarithm of that number.

Q. Don't say "this" and "these"; repeat the figures. A. 60541 is the logarithm of 40.31. This logarithm 50253 represents the logarithm factor of the strength of the sodium hydroxide used in that analysis. This factor 50253 being determined previous to this analysis and 10794 being the addition of those two logarithms, or multiplication, the case being logarithms. This logarithm 17932 being the logarithm of 1.5112, after subtracting gives 92862, which gives us 84.84, being the anti-logarithm of this number 92862.

Q. And the use of these logarithms is necessary in determining the quantities of these two materials in that mixture? A. The reason logarithms are used in that case is to simplify the process.

Q. They are necessary to be used? A. Yes, sir.

Q. What was the nature, other than these figures, of the analysis you made? A. To determine the percentage of sulphuric acid and nitric acid in the solution.

Q. Did you at any point in your analysis separate the sulphuric from the nitric acid? A. No, sir.

Q. Did you at any point ascertain the specific gravity of either? A. No, sir.

Q. Both these acids are produced at varying strengths, according to commercial necessity, are they not? A. Yes, sir.

Q. Did you test either one of these to ascertain their individual and relative strengths? A. No, sir.

Q. Could you tell from the examination you made of them whether they were concentrated or diluted, or either one of them? A. No, sir.

Q. Do you know since your employment with this concern what this mixture is used for? A. Yes, sir.

Q. What is it? A. It is used to bring a quantity of acid which has been used to nitrate cotton back to a required strength.

Q. In other words, to fortify acids already exhausted or partially

exhausted, for the purpose of reviving them, or reviving their strength, to make them suitable for nitrating cotton again? A. Yes, sir.

Q. And that nitrated cotton is used for what? A. I could'n't tell you.

Q. Does your firm produce it? A. Produces nitrated cotton, yes, sir.

Q. What do they use it for? A. What does the company use nitrated cotton for?

Q. Yes. A. The company does not use nitrated cotton, to my knowledge.

Q. They sell to others? A. Yes, sir.

Q. To your personal knowledge, you don't know what others use it for? A. Yes, sir.

Q. Do you from your experience as a chemist know what nitrated cotton is used for, or to what uses it is devoted?

Mr. Lockett. I object.

Gen. Appr. Cooper. Objection overruled.

Mr. Lockett. Exception.

A. Used for an innumerable number of purposes.

Q. Principally what? A. Explosives.

Q. How do these other consignments of mixtures of sulphuric acid and nitric acid approximate the percentage shown by this analysis?

Mr. Lockett. I object to that.

Gen. Appr. Cooper. What do you mean by "the other?"

Mr. Mulcahey. He testified that he had analyzed some three samples a day since he has been working for this concern.

Mr. Lockett. But not from this shipper.

Mr. Mulcahey. I propose to insist upon this question and then follow it up with another question.

Mr. Lockett. I object to the question in its present form.

Mr. Mulcahey. Well, all right; I will ask the second question first.

Q. In the use of this mixture as a fortifying mixture for other chemicals, is the nitric acid ever removed or separated from the sulphuric acid? A. I don't quite understand the question.

Q. I will put it in another way. Is this mixture of sulphuric acid and nitric acid used for the purpose you testified to in its condition as you receive it? A. Yes, sir.

Q. You have received other shipments of a mixture of the same acids from other shippers, have you not? A. Yes, sir.

Q. Foreign or domestic? A. Domestic.

Q. Were those shipments used for this same purpose?

Mr. Lockett. I object.

Gen. Appr. Cooper. Objection sustained.

Q. Is the mixture of sulphuric acid and nitric acid used by the Nonnalo Chemical Company used for anything else than fortifying exhausted or partially exhausted mixtures? A. No, sir.

Mr. Mulcaney. That is all.

Mr. Lockett. That is all.

NICHOLAS V. S. MUMFORD, called as a witness for the protestants, being duly sworn, testified as follows:

By Mr. Lockett:

Q. What is your full name? A. Nicholas V. S. Mumford.

Q. You live in Providence, Rhode Island? A. Yes, sir.

Q. You have worked for the Nonnalo Chemical Company? A. Yes, sir.

Q. Are you a chemist by profession? A. Yes, sir.

Q. From what school did you graduate? A. Massachusetts Institute of Technology.

Q. Did you receive any degree there? A. Yes, sir.

Q. What degree? A. Bachelor of science.

Q. When did you receive that degree? A. I received my diploma June, 1916, but I finished the work in December, 1915.

Q. You left school in December, 1915? A. Yes, sir.

Q. After you left school in 1915 with what firm did you engage yourself? A. Nonnalo Chemical Company.

Q. What have been your duties with the Nonnalo Chemical Company? A. Analysis of mixed acids.

Q. Analysis of mixed acids? A. Yes, sir.

Q. Have you had any other practical experience in the practice of your profession other than that received by virtue of your employment with the Nonnalo Chemical Company? A. Only such as we got in the Institute of Technology.

Q. But from no other concern? You have engaged yourself with no other concern? A. No, sir.

Q. Are you familiar with the term chemical elements? A. Yes, sir.

Q. As an expert chemist, how do you describe that term? A. A chemical element is a chemical substance which can not be subdivided any further. That is, from a chemical element you can not get anything which is any simpler than the element itself.

Q. Are you familiar with the term chemical compound? A. Yes, sir.

Q. Will you state what, in your opinion, constitutes a chemical compound? A. A chemical compound is a combination of chemical elements which can be subdivided into those elements.

Q. State whether or not you are familiar with the term chemical mixture? A. No, sir.

Q. Did you ever hear that term used in the science of chemistry? A. No, sir.

Q. Did you ever read the term anywhere in any textbook? A. Not in a textbook; no, sir.

Q. I show you paragraph 5 of the act of 1913, and ask you if you have read that paragraph? A. Yes, sir.

Q. Are you familiar with the articles enumerated except for the question of chemical mixtures, which term I understood you to state you never heard used? Do you understand the question? A. No.

Q. I show you paragraph 5 and ask you if you are familiar with the descriptions, alkalies, alkaloids, mixtures, and salts, etc., described in paragraph 5, with the exception of chemical mixtures, which you have testified you have never heard that term used?

Mr. Mulvaney. We object to the question on the ground that chemical mixtures is not used in the paragraph.

Genl. Appr. Cooper. Let me see the paragraph. (The General Appraiser reads the paragraph in question.) I will overrule the objection.

Question repeated by the stenographer.

Q. (Continued.) In other words, are you familiar with the descriptions, the chemical terms in that paragraph, with the exception of chemical mixtures? A. I am, with the exception of the chemical mixtures, and the medicinal things enumerated there.

Q. Now, are you familiar with the merchandise which the Nonnabo Chemical Company imported in this car, namely, mixed acids, consisting, as has been described by other witnesses, of certain proportions of sulphuric and nitric acids? A. Do you mean with that particularly?

Q. With the merchandise as a whole? A. Yes, sir.

Q. Now state whether or not, in your opinion, you would consider mixed acids as imported a chemical compound? A. No, sir; I would not.

Q. State clearly—tell us your reasons for not considering that merchandise a chemical compound. A. Because the mixture can be separated into its component parts substantially.

Q. How could it be separated? A. By distillation.

Q. State whether or not any chemical reaction takes place when a chemical compound is created? A. Yes, sir.

Q. State if you know whether the mixture of sulphuric acid and nitric acid of the proportions referred to by the previous witness in this particular case would, in your opinion, create a chemical compound? A. No, sir.

Q. State whether or not the mixture of nitric acid and sulphuric acid in any proportion would create a chemical compound? A. No, sir.

Q. How then, in your opinion, would you describe this merchandise from a chemical standpoint? A. As a mechanical mixture.

Q. What do you mean by mechanical mixture? A. A mechanical mixture is a mixture of substances which can be separated by other than chemical means.

Q. State if you know why sulphuric acid and nitric acid mixed together does not create a chemical compound. A. They do not interact.

Q. What? A. They do not interact.

Q. With each other? A. With each other.

Q. Do you mean by that that they are incapable of interacting with each other? A. So far as I know, they are.

Q. Would it be dangerous to ship nitric acid by itself in a tank car? A. I think it would.

Q. Would it be dangerous to ship nitric acid in any kind of a container? A. I don't know.

Mr. Lockett. That is all.

By Mr. Mulvaney:

Q. I misunderstood you in one or another of your answers, Mr. Mumford. To clear it up, I would like to ask you again: I understood you to say that a chemical compound is a combination of chemical elements which can be subdivided into those elements? A. Yes, sir: by proper means.

Q. Later on in your examination you said that this was a mechanical mixture as distinguished from a chemical compound because it could be so resolved into its elements? A. I think I qualified that by saying "by other than chemical means."

Q. So, that this mixture would be a chemical compound of materials in mechanical combination, if I distinguished the answers correctly?

Mr. Lockett. I think that is a contradiction.

A. I don't think there could be any such thing as a chemical compound in a mechanical mixture.

Q. In answering once you said that a chemical compound was such a combination of chemical elements which could be subdivided into those elements? A. Yes, sir.

Q. In answer to another question you said that this mixture would be considered a mechanical mixture, because the chemical elements could be subdivided or separated by other than chemical means? A. Yes, sir. A mechanical mixture can be separated by other than chemical means. A chemical compound can be separated but it needs chemicals to do it. You have to use other chemicals to do it. You have to form other substances.

Q. You have heard the term mechanical mixture? A. Yes, sir.

Q. But never the term chemical mixture? A. No, sir.

Q. Is sulphuric acid a chemical? A. Yes, sir.

Q. Is nitric acid a chemical? A. Yes, sir.

Q. These two, as they came to your laboratory, were mixed were they not? A. Yes, sir.

Q. The danger resulting from a shipment of nitric acid in metal tank cars is that it would destroy the cars by eating away the metal? A. Yes, sir.

Q. That is a chemical danger? A. Yes, sir.

Q. And that danger is minimized or overcome by the mixture of a quantity of sulphuric acid? A. Yes, sir.

Q. In your opinion, what percentage of sulphuric acid would be necessary to mix with nitric acid to overcome this danger? A. I don't know.

Q. Have you ever tried to find out? A. No, sir.

Q. Have you ever heard, learned in your studies, or heard in your practice that it was necessary to have an almost equal proportion of them? A. No, sir.

Q. Tell me this, please: I understood you to say that these acids do not interact or react. How could the chemical danger from a shipment of nitric acid be overcome by the sulphuric acid if the sulphuric acid had not some effect upon the nitric acid? A. Read the question, please.

Q. To put it plainly, what I have in mind is this: That to obviate the dangerous result of the nitric acid by the mixture of sulphuric acid indicates that the sulphuric acid has some neutralizing effect upon the nitric acid? A. No, sir: I don't think it has any neutralizing effect.

Q. It has some effect on the nitric acid in order to neutralize the effect of danger? A. I don't know how that effect is accomplished.

Q. Can the dangerous tendencies of nitric acid be overcome or minimized by the use of any chemical? A. I don't know.

Q. Wait a minute. By the use of any chemical which did not have some effect upon the nitric acid itself? A. I would have to give the same answer: I don't know.

Q. Do you know about the ultimate uses of this mixture? A. The acids?

Q. This mixture of the two acids? A. Yes, sir.

Q. Are they separated before they are used by the Nonnabo Chemical Company? A. No, sir.

Q. Sulphuric acid is not an element? A. No, sir.

Q. It is a chemical mixture of acids? A. A chemical compound.

Q. Nitric acid is the same? A. Yes, sir.

Mr. Mulvaney. I think that is all.

Genl. Appr. Cooper. Any questions?

By Mr. Lockett:

Q. Mr. Mumford, a mixture of chemicals, of course, would not describe a chemical compound, necessarily, would it? A. No, sir.

Q. A mixture of chemicals, as Mr. Mulvaney has used it, namely: The fact that sulphuric acid and nitric acid are put together, state whether or not, in your opinion, it would create anything more than a mechanical mixture.

Mr. Mulvaney. I object. It is immaterial.

Genl. Appr. Cooper. I will overrule the objection.

A. In that case, no.

Mr. Lockett. That is all.
Mr. Mulvaney. That is all.

PAUL S. SMITH, called as a witness for the protestants, being duly sworn, testified as follows:

By Mr. Lockett:

Q. Mr. Smith, what is your full name? A. Paul S. Smith.
Q. By whom are you employed? A. By the O'Bannon Corporation, and the Nonnabo Chemical Company.
Q. For Mr. Mulvaney's benefit, what is the connection between the O'Bannon Corporation, and the Nonnabo Chemical Co.?

Mr. Mulvaney. How it will benefit me I can't see.
Mr. Lockett. That is what I was trying to find out when you asked the question.

Q. What is the connection between the two concerns? A. To a certain extent the Nonnabo Chemical Company is a subsidiary to the O'Bannon Corporation.
Q. And your duties in connection with the Nonnabo Chemical Company are what? A. I am chemist in charge of manufacturing.
Q. Where did you obtain your education? A. Harvard University.
Q. Did you obtain any degrees there? A. B. A. in 1902 and M. A. and Chemistry in 1903.
Q. Both from Harvard? A. Yes, sir.
Q. And since your graduation in 1903, state what your experience has been in the practice of your profession as a chemist? A. I spent the year 1903 to 1904 as laboratory assistant at the Naval Torpedo Station, Newport, R. I. From 1904 to 1906 with the International Smokeless Powder & Chemical Company, Parlin, N. J. From 1906 to 1907 experiment station of the E. I. Dupont Powder Company, Wilmington, Del., from 1907 to 1910, chemist for the Fabrikoid Company, Newburgh, New York, and from 1910 to the present time with the two companies I have mentioned.
Q. Mr. Smith, you are familiar with the merchandise which is the subject of this protest? A. I am.
Q. How long have you been familiar with mixed acids? A. Well, since I began to practice chemistry—in other words, at the naval torpedo station.
Q. The analysis of the shipment in question as made by Mr. Edmondson recorded in this book gives certain percentages of sulphuric and nitric acid and lower—— A. Lower oxides of nitrogen.
Q. I will show you this record and ask you if you are familiar with it? A. Do you mean specifically with the figures given here?
Q. Familiar with the results obtained? A. I am; yes.

Q. Now, Mr. Smith, will you please state why, if you know, the mixed acid in this case was shipped in about these proportions?

Mr. Mulvaney. We object to that as immaterial and incompetent. That has nothing to do with the case. The purpose of the shipment on the other side has no bearing on the classification of this merchandise.

Question repeated by stenographer.

Q. I will change it. State why your concern ordered the mixed acid in this case shipped in about these proportions.

Mr. Mulvaney. I object to that. What they may have ordered on this side for their own chemical purposes can have no bearing on the classification of the merchandise. They may have ordered it for one purpose and after it came used it for another. They may have used it for that purpose. What determines classification is not what takes place in the United States before it starts on its journey.

Genl. Appr. Cooper. I will overrule the objection.

Question repeated by stenographer.

Mr. Mulvaney. Exception.

A. Because in these proportions it allows us to make the most economical use of the mixture.

Q. What is the purpose, if any, of mixing the sulphuric acid with the nitric acid?

Mr. Mulvaney. Same objection.

Genl. Appr. Cooper. Objection overruled.

A. I don't know whether I understand the question.

Q. What is the object of putting the sulphuric acid with the nitric acid when shipped in a tank car?

Mr. Mulvaney. We object to that, sir. The question has already been answered in answer to the last question. They order in these proportions and in this mixed condition for their own economical purposes. Now I submit that on direct examination or redirect examination counsel should not be permitted to correct a statement of that kind by bringing out another one.

Genl. Appr. Cooper. If the witness has made a mistake, he should have an opportunity to correct it. I will overrule the objection.

Question repeated by stenographer.

A. To render it possible for us to secure nitric acid of the requisite concentration.

Q. State, if you know, what prevention [protection?], if any, there is to a steel or iron car by the presence of sulphuric acid with nitric acid? A. The sulphuric acid when placed in a new steel container; that is, one which has never contained any acid of any character, and at first it attacks the steel or iron, forming a basic salt of iron. This basic salt of iron is insoluble in sulphuric acid of high concentration, or any mixture of sulphuric and nitric acid of high concentration, and therefore protects the steel or iron from corrosive action on the part of the nitric acid.

Q. State, if you know, what danger there would be, if any, to a tank car if nitric acid was shipped by itself without the presence of any sulphuric acid in it? A. The escaping nitric acid, in the case of a leak or accident which broke the container, would, in the presence of organic matter, be very apt to result in a fire.

Q. State the reason, if you know, why nitric acid of high strength is forbidden to be shipped by itself in glass, iron, or steel containers?

Mr. Mulcahey. Is the witness called upon to interpret a law? I object.

Gen. Appr. Cooper. I will sustain the objection.

Q. Mr. Smith, you are familiar with the term "chemical compound," are you? A. I am.

Q. Will you give us, please, your opinion as an expert as to what the term means? A. It means the union of two or more chemical elements—a chemical union of two or more chemical elements.

Q. State whether or not the merchandise the subject of this protest is a chemical compound within the meaning of your definition? A. No; it is not.

Q. Why? A. Because the two components of the mixture exist unchanged and independently in the mixture.

Q. Could the sulphuric acid and the nitric acid in the shipment in question be separated? A. They could.

Q. By what process? A. A process of distillation.

Q. State whether or not sulphuric acid and nitric acid ever unite with each other chemically? A. They do not.

Q. Is it possible for them to? A. Not chemically.

Q. State whether or not a chemical compound can, as a rule, be separated by any process of distillation? A. Separated from what?

Q. State whether or not the elements which previously went to make up a chemical compound can be recovered by any process of distillation? A. Not in general; no.

Q. Now, did you ever hear the term "chemical mixture," Mr. Smith? A. I have not; no.

Q. I show you paragraph 5 of the act of 1913 and ask you if you have read that paragraph? A. May I be allowed to amend the answer to the previous question?

Gen. Appr. Cooper. Yes.

A. (Continued.) I have never heard the term "chemical mixture" excepting in connection with this matter that we are discussing now.

Q. That is, in all your experience as a practical chemist and in all your experience as a student you never heard the term "chemical mixture" used prior to this case? A. No.

Q. I show you paragraph 5 of the tariff act of 1913 and ask you if you are familiar with the contents of that paragraph? A. I am; yes.

Q. What kind of a mixture, if any, would you call this merchandise in question? A. I should call it a mechanical or physical mixture.

Q. Will you give us your reason, please, for that opinion? A. Because of the existence in the mixture of the component parts, unchanged.

Q. State whether or not the merchandise the subject of this protest has any chemical name that you know of other than as a mixed acid? A. No.

Q. Did you ever hear it called by any other name? A. No.

Q. How necessary is it, Mr. Smith, to have the analyses which your concern make absolutely correct, as far as possible, when said analyses are made for the purpose of determining the amount of nitric acid and sulphuric acid? A. It is highly important. The chief property or characteristic of the product we manufacture depends on the accuracy of these analyses. By that I mean not necessarily the analyses of the tank cars, but the analyses of all the mixed acids which we use.

Q. State whether or not your concern could import or could use nitric acid and sulphuric acid by mixing it yourselves? A. If it could be shipped; yes.

Q. If the nitric acid could be shipped by itself and the sulphuric acid shipped by itself to your place of business, you could mix them at your place of business as well as the shippers could? A. Quite advantageously.

Q. State whether or not it is necessary to have any particular percentage of sulphuric acid mixed with nitric acid in order to get the required strength of nitric acid for your purposes? A. Not within comparatively wide limits.

Mr. Lockett. I think that is all.

By Mr. Mulvaney:

Q. Is any considerable presence of sulphuric acid necessary in order to protect the metal tank car from the effects of nitric acid? A. I believe so; yes, sir.

Q. Have you ever inquired or investigated or tested to ascertain? A. Not personally.

Q. Do you know that the presence of as low as 3% sulphuric acid would neutralize the effect of nitric acid upon the metal tank car? A. I have understood so.

Q. That is a good deal different from the percentage here isn't it? A. A very wide difference.

Q. What is the difference between the terms mechanical mixture and mechanical combination? A. I am unable to say. I should say that they are both very loose terms, especially mechanical combination.

Q. Have you heard the term a mixture of chemicals present in mechanical combination? A. I think not.

Q. In the separation through the process of distillation is any part of either of these acids lost? A. Not with suitable apparatus; no.

Q. Have you heard of substances or preparations described as having substances present in chemical combination? A. I am unable to answer that question.

Q. Have you heard the term applied to this very mixture you have here that the sulphuric acid and the nitric acid were present in a mechanical combination? A. No.

Q. Have you ever heard the term mixed acids used for any other mixtures of acids than these two? A. I have not.

Q. In answer to one of the later questions of your counsel you answered that this was a mechanical or physical mixture. May I supplement that by asking you of what is it a mechanical or physical mixture? A. Of two independent substances.

Q. Chemical substances? A. Chemical compounds.

Q. Chemical compounds? A. Yes, sir.

Q. You use these in your manufacturing processes in the condition in which you import it? A. Yes.

Mr. Mulvaney. That is all.

Mr. Lockett. That is all.

Genl. Appr. Cooper. Is the case submitted?

Mr. Lockett. Yes. I would like to ask thirty days to write a brief?

Mr. Mulvaney. And may I have ten days after the thirty days for reply, Mr. Lockett to have the same time after the filing of my brief to reply thereto?

Genl. Appr. Cooper. Yes. Is the case submitted?

Mr. Lockett. Case submitted.

Mr. Mulvaney. Submitted.

[Endorsed:] No. 1974. United States Court of Customs Appeals. Filed May 2, 1919. Arthur B. Shelton, clerk.

DEPOSITION TAKEN IN 803766.

Commission to take depositions.

No. 349.

The President of the United States of America to American consul, Hamilton, Ontario, greeting:

Know ye, that we, in confidence of your prudence and fidelity, have appointed you commissioner and by these presents do give you full power and authority, diligently to examine upon his corporal oath, or affirmation, before you to be taken, and upon the interrogatories, direct and cross, hereunto annexed, J. C. Vonderau as witness on the part of the importers in a certain cause now pending undetermined before the Board of United States General Appraisers, wherein Nonnabo Chemical Company are the protestants in the matter of protest 803766 on mixed acids. Joseph F. Lockett, 60 State Street, Boston, Mass., attorney.

And we do hereby require you before whom such testimony may be taken, to reduce the same to writing, and to close it up under your hand and seal directed to the chief clerk of the Board of United States General Appraisers, at the city of New York, as soon as may be convenient after the execution of this commission; and that you return the same when executed, as above directed, with the title of the cause indorsed on the envelope of the commission.

Witness my hand and the seal of the Board of United States General Appraisers, at the city of New York, this 28th day of July, in the year of our Lord, one thousand nine hundred and sixteen.

EUGENE G. HAY,
United States General Appraiser.

[Seal United States Board of General Appraisers.]

Attest:

D. P. DUTCHER,
Chief clerk.

BEFORE THE BOARD OF UNITED STATES GENERAL APPRAISERS.

Board No. 1.

In the matter of protest No. 803766 of Nonnabo Chemical Company on mixed acids.

Direct interrogatories on behalf of the importer addressed to the witness, J. C. Vondereau, Hamilton, Ontario.

1. State your full name.
2. How long have you been employed by the Grasselli Chemical Co. of Hamilton, Ontario?

3. State the nature and extent of your duties since you have been employed by the Grasselli Chemical Co.

4. State whether or not you have any knowledge of the shipment of sulphuric and nitric acid which were mixed together in tank car ATX #423 and shipped on or about January 12, 1916, to the Nonnabo Chemical Co., Phillipsdale, R. I.

5. If your answer to the preceding interrogatory be in the affirmative, state, if you know, the percentage of nitric acid and the percentage of sulphuric acid shipped in tank car ATX #423 and how you obtained this knowledge.

6. State what experience, if any, you have had as a practical manufacturing chemist.

7. State whether or not the mixing of sulphuric acid and nitric acid in car ATX #423 created any chemical compound.

8. If your answer to the preceding interrogatory be in the negative, state your reasons therefor.

9. State what effect, if any, a shipment of nitric acid without any sulphuric acid mixed with it would have upon the inside of a tank car, so called.

10. State whether or not there would be any danger, other than to the tank car, from shipping nitric acid in a tank car.

11. If nitric acid and sulphuric acid were to be shipped separately, provided it is dangerous to ship nitric acid in tank cars, in what kind of containers or containers would it be necessary to ship nitric and sulphuric acid separately?

12. State, if you know, the approximate cost of mixing the nitric acid and sulphuric acid which was shipped in tank car ATX #423.

13. State whether or not the nitric and sulphuric acids which were shipped in tank car ATX #423 could be separated by any process of distillation.

14. If your answer to the preceding interrogatory be in the affirmative, state whether or not you could recover the same proportions of nitric acid and sulphuric acid shipped in tank car ATX #423, and, if so, by what process.

Endorsed: Board of U. S. General Appraisers. In the matter of protest No. 803766 of Nonnabo Chemical Company on mixed acids. Direct interrogatories to J. C. Vonderau, Hamilton, Ont. From the office of Joseph F. Lockett, 60 State St., Boston.

BOARD OF UNITED STATES GENERAL APPRAISERS.

No. 803766.

In the matter of protest of Nonnabo Chemical Company on mixed acids.

Cross-interrogatories on behalf of the United States addressed to the importer's witness, J. C. Vondereau, Hamilton, Ontario.

Cross-interrogatory 1. Please state if you are a registered chemist in the Dominion of Canada, the character and nature of your duties

as a practical manufacturing chemist with the Grasselli Chemical Co., of Hamilton, Ontario, and your general experience as a manufacturing chemist.

Cross-interrogatory 2. State if you personally supervised or have any personal knowledge of the shipment of certain mixed sulphuric and nitric acids in tank car ATX No. 423 on or about January 12, 1916, to the Nonnabo Chemical Co., Phillipsdale, R. I. If so, state in what manner the said sulphuric and nitric acids were mixed and contained in the said tank car and the metal of substance of which the said tank car is composed.

Cross-interrogatory 3. Did the admixture of the nitric and sulphuric acids in the said tank car create any chemical compound or did the admixture of the two said acids only result in a chemical mixture?

Cross-interrogatory 4. State, if you know, whether the said nitric or sulphuric acids were concentrated or diluted before or after they were put or mixed in the said tank car and also the specific gravity of the acids before and after they were put or mixed in said tank car.

Cross-interrogatory 5. What degree of strength would the said acids, either separately before mixture or combined after mixture, have to possess in order to have a detrimental effect upon the said metal tank car under the ordinary weather temperatures prevailing at the time of exportation, namely, January 12, 1916?

Cross-interrogatory 6. Do you know to what manufacturing use the said sulphuric and nitric acids were put and in what condition they appeared when used for the said manufacturing use? If so, what?

Cross-interrogatory 7. State, if you know, the amount of the sulphuric and nitric acid shipped in said tank car and whether the mixture of these chemicals in the proportions contained in the said car especially fitted them for a specific use. If so, what.

Endorsed: Original. Board of United States General Appraisers. Board No. 1. In the matter of protest 803766 of Nonnabo Chemical Company on mixed acids. Cross-interrogatories. Bert Hanson, Assistant Attorney General, attorney for the United States, office and post-office address, 641 Washington Street, New York, N. Y. Rec'd July 21, 1916.

Directions for executing the commission.

The person to whom a commission is directed or before whom a deposition is taken, unless otherwise expressly directed in the commission or in the order for taking the depositions, must execute the commission or order, as follows:

1. He must publicly administer to each witness examined an oath or affirmation to testify the truth, the whole truth, and nothing but the truth, as to the matters respecting which the witness is to be examined.

2. He must reduce the examination of each witness to writing or cause it to be reduced to writing by a disinterested person. After

it has been carefully read to or by the witness it must be subscribed by the witness.

3. If an exhibit is produced and proved, the exhibit, or if the witness or other person having it in his custody does not surrender it, a copy thereof must be annexed to the deposition to which it relates, subscribed by the witness proving it, and numbered or otherwise identified, in writing thereupon, by the commissioner or person taking the deposition, who must subscribe his name thereto.

4. The commissioner or person taking the deposition must subscribe his name to each half sheet of the deposition; he must annex all the depositions and exhibits to the commission, or to a certified copy of the order for taking the deposition, with the certificate specified in paragraph 9; and he must close them up under his seal and address the packet to the clerk of the Board at his official residence.

5. If there is a direction on the commission, or in the order, to return the same through the post office, he must immediately deposit the packet, so addressed, in the post office and pay the postage thereon.

6. If there is a direction on the commission, or in the order, to return the same by an agent of the party at whose instance it was issued or granted, the packet, so addressed, must be delivered to the agent.

7. Where a commission is directed to two or more persons, one or more of them may execute it, as herein prescribed.

8. A copy of these rules must be annexed to each commission or order to take depositions.

9. The commissioner or other person before whom one or more depositions are taken must subscribe and annex to each deposition a certificate substantially in the following form, the blanks being properly filled up:

"STATE OF _____ }
"*County of* _____ } *ss:*

"I, _____, do certify that _____ _____, the witness, personally appeared before me on the _____ day of _____, at _____ o'clock in the _____ noon, _____ at the _____, in the State of _____ and after being sworn (or 'affirmed,' as the case may be), to testify the truth, the whole truth, and nothing but the truth, did depose to the matters contained in the foregoing deposition, and did, in my presence, subscribe the same and indorse the exhibits annexed thereto. And I further certify that I have subscribed my name to each half sheet thereof and to each exhibit. And I further certify that _____ appeared in behalf of the _____ and that _____ appeared in behalf of the _____."

Deposition of witness produced, sworn and examined the 17th day of August in the year 1916, at Hamilton, Ontario, Canada, under and by virtue of a commission issued out of the Board of United States General Appraisers in a certain cause therein pending and at issue between the United States and Nonnabo Chemical Company, protestant, as follows:

John C. Vonderau, of Hamilton, Ontario, Canada, by occupation superintendent or manager of the Grasselli Chemical Company (Limited) of the same place, aged 55 years and upwards, being duly and publicly sworn pursuant to the directions hereunto annexed and examined on the part of the protestant, doth depose and say as follows:

First. To the first interrogatory he saith, John C. Vonderau.

Second. To the second interrogatory he saith, 4 years.

Third. To the third interrogatory he saith, As superintendent or manager.

Fourth. To the fourth interrogatory he saith, Yes; I have knowledge of that shipment.

Fifth. To the fifth interrogatory he saith, The shipment contained 49.64 per cent of nitric acid, 45.61 per cent of sulphuric acid. I obtained that knowledge by chemical analysis made in the company's laboratory, which analysis I know to be correct.

Sixth. To the sixth interrogatory he saith, I have had 23 years' experience as a practical manufacturing chemist.

Seventh. To the seventh interrogatory he saith, No; it did not create a chemical compound.

Eighth. To the eighth interrogatory he saith, The proof that this was a mechanical and not a chemical mixture is that the nitric and sulphuric acids could be separated.

Ninth. To the ninth interrogatory he saith, It would destroy it. Besides, the shipment of strong nitric acid without sulphuric acid is absolutely prohibited by the laws of United States and Canada. (See Official Classification No. 43, effective January 1, 1916, of the Interstate Commerce Commission, paragraphs 1857 and 1858, and regulations of the Railroad Commission of Canada for the transportation by freight of dangerous articles other than explosives, paragraphs 1857 and 1858.

Tenth. To the tenth interrogatory he saith, Yes: strong nitric acid is exceptionally dangerous; and as leaks would develop, it would cause all kinds of damage and trouble.

Eleventh. To the eleventh interrogatory he saith, Sulphuric acid can be shipped separately in iron tank cars, but nitric acid of a strength used in this mixture can not be shipped alone in any kind of container, not even in glass.

Twelfth. To the twelfth interrogatory he saith, Approximately $1.

Thirteenth. To the thirteenth interrogatory he saith, Yes: they can be so separated.

Fourteenth. To the fourteenth interrogatory he saith, Yes: it can be done by the process of distillation. By heating the mixture the nitric acid distills off and the sulphuric acid remains.

First. To the first cross-interrogatory he saith, I am not a registered chemist in the Dominion of Canada. I am the manager of the Grasselli Chemical Company, Limited, of Hamilton, my duties being to superintend the manufacture of chemicals. I have had 19 years' practical experience in the United States and 4 in Canada as a manufacturing chemist.

Second. To the second cross-interrogatory he saith, I can not say that I personally supervised it, but I have positive knowledge that the acid was made in our works and shipped on or about Jaunary 12, 1916, to the Nonnabo Chemical Company, of Phillipsdale, Rhode Island. The two acids were mixed in certain proportions by weight, and the final analysis shows that the mixture contained 49.64 per cent of nitric acid and 45.61 per cent of sulphuric acid. The tank, in which the acid was shipped, was composed of iron.

Third. To the third cross-interrogatory he saith, no; it did not create a chemical compound, nor did it result in a chemical mixture. It can only be called a mechanical mixture for the reason that the nitric and sulphuric acids could be separated by heating, which is not the case with chemical mixtures.

Fourth. To the fourth cross-interrogatory he saith, the sulphuric acid was concentrated before mixing; the nitric, however, was made at the strength at which it was used for the mixture. The specific gravity of the sulphuric acid was 1.84; that of the nitric acid was about 1.5.

Fifth. To the fifth cross-interrogatory he saith, any sulphuric or mixed acid at a specific gravity below 1.6 would be detrimental to a metal-tank car. Nitric acid could not be shipped in a metal-tank car at any strength. Combined after mixture the acids at a gravity of weaker than 1.6 would be detrimental to the metal-tank car.

Sixth. To the sixth cross-interrogatory he saith, I have no positive knowledge of this; I can only surmise that they were used for the manufacture of explosives.

Seventh. To the seventh cross-interrogatory he saith, the total weight contained in tank car ATX #423 being 51,660 pounds the sulphuric acid will amount to 24,230 pounds and the nitric acid to 27,430 pounds. In my opinion, a mixture of that kind would be used for making explosives.

JOHN C. VONDERAU.

DOMINION OF CANADA,

Province of Ontario, Municipality of Hamilton,

Consulate of the United States of America, ss:

I, José de Olivares, consul of the United States of America in the municipality of Hamilton, in the Province of Ontario, in the Dominion of Canada, duly commissioned and qualified, do certify that John C. Vonderau, the witness, personally appeared before me on the seventeenth day of August, at three o'clock in the afternoon, at the consulate of the United States of America, in the municipality of Hamilton, in the Province of Ontario, in the Dominion of Canada, and after being duly sworn to testify the truth, the whole truth, and nothing but the truth, did depose to the matters con-

tained in the foregoing deposition, and did, in my presence, subscribe the same. And I further certify that I have subscribed my name to each half sheet thereof. And I further certify that no attorney appeared in behalf of the United States and that no attorney appeared in behalf of the protestant.

In witness whereof I have hereunto set my hand and affixed the seal of the consulate at Hamilton aforesaid this seventeenth day of August, one thousand nine hundred and sixteen.

[Seal, American Consulate, Hamilton, Ontario.]

JOSÉ DE OLIVARES,
Consul of the United States of America,
at Hamilton, Ontario, Canada.

Service fees, Nos. 249 and 250.

[Fee stamps canceled.]

Endorsed: 1974. Board of U. S. General Appraisers, 641 Washington Street, New York, July 28, 1916. Commission No. 349. Nonnabo Chemical Co. Protest 803766. Received Aug. 19, 1916. Board of U. S. General Appraisers. D. P. Dutcher, chief clerk.

United States Court of Customs Appeals, Arthur F. Shelton, clerk. Filed May 2, 1919.

EXHIBIT 2 IN 803766.

A. T. X. 423. Fort. Acid. 1-28-16.

18.4899	40.35	20.0285	39.89	36.8317	N
16.9787	.04	18.5339	.04	35.8980	10.09
1.5112	40.31	1.4946	39.85	.9337	
60541		60043		.00389	
50253		50253		65294	
10794		10296		65683	
17932		17452		97021	
92862	=84.84	92844	=84.81	68662	=48.60
					.18
					48.42

N_2O_4=.50
Second nitrometer=48.59
.18

48.41%HNO_3
47.10%H_2SO_4
48.41%HNO_3
.50%N_2O_4

84.82
37.72

47.10

(Signed) C. J. E.

I, George W. Evans, a Notary Public for the county of Bristol and State of Rhode Island certify the foregoing to be a true copy of the original report of "A. T. X." 423 contained in a Tank Car Record Book belonging to the Nonnabo Chemical Company.

[SEAL.] GEORGE W. EVANS,
Notary Public.

Barrington, R. I., September 27, 1916.
My commission expires June 30, 1917.

COUNTY OF BRISTOL,
State of Rhode Island:

I, Charles J. Edmonds, being duly sworn declare that the figures contained in the above record constitute a true report of the analysis of the contents found in Tank Car A. T. X. 423 at Phillipsdale, R. I., on January 28, 1916.

CHARLES J. EDMONDS.

Sworn to before me this 27th day of September, 1916, at Barrington, R. I.

[Seal George W. Evans, Notary Public, Providence, R. I.]

GEORGE W. EVANS,
Notary Public.

My commission expires June 30, 1917.

Protest No. 803766. Exhibit 2. 9-26-1916. S. 1934.

DECISION OF THE BOARD.

(T. D. 37927—G. A. 8235.)

United States General Appraisers.

NEW YORK, *February 26, 1919.*

In the matter of protests 850017, etc., of Aetna Explosives Co. (Inc.) against the assessment of duty by the collector of customs at the Port of Ogdensburg.

BEFORE BOARD 1.

SULLIVAN, *General Appraiser:*

This controversy arises over the proper classification of certain merchandise invoiced as "mixed acids" consigned by the Aetna Explosives Co., the protestants, at Drummondville, Canada, to itself at Emporium, Pa., the place of business of the protestants.

The collector classified this merchandise as mixed acid under paragraph 5 of the tariff act of 1913, which is as follows:

5. Alkalies, alkaloids, and all chemical and medicinal compounds, preparations, mixtures, and salts, and combinations thereof not specially provided for in this section, 15 per centum ad valorem.

It is the contention of the protestants that the merchandise is entitled to free entry as nitric acid under paragraph 387 of the same act, which reads:

387. Acids: Acetic or pyroligneous, arsenic or arsenious, carbolic, chromic, fluoric, hydrochloric or muriatic, nitric, phosphoric, phthalic, prussic, silicic, sulphuric or oil of vitriol, and valerianic.

The issue, therefore, is squarely presented: Is this merchandise free of duty as nitric acid within paragraph 387, or is it a chemical mixture, and subject to duty under provisions of paragraph 5?

The testimony is voluminous. It appears that some time in 1914 or 1915 the Aetna Explosives Co., doing business at Emporium, Pa., was engaged in the manufacture of explosives. In such manufacture sulphuric and nitric acid are used. The protestants were in the possession or ownership of a factory at Drummondville, Canada, and utilized this factory in the manufacture of nitric acid. This acid was transported from Drummondville to Emporium in what are known as "tank cars." The claim is made that it was impossible to transport it in the usual containers, namely, glass carboys, as a sufficient number could not be obtained for quick and economical transportation; that the Interstate Commerce Commission by its rules and regulations prohibits the transportation of nitric acid of high grade in tank cars, unless it is mixed with other acid that will counteract its corrosive effect on steel cars. Sulphuric acid was accordingly mixed with the nitric acid to the extent of about 20 per cent, so that the mixture consisted of about 20 per cent of sulphuric and 80 per cent of nitric acid and water; the sulphuric acid was to counteract the effect of the nitric acid upon the cars. It is not questioned that nitric acid can be transported in glass carboys. It is therefore contended that as the mixture of sulphuric with the nitric acid was to permit of its safe and economical transportation the acid was entitled to free entry. It is also claimed that as the mixture could not be used as shipped, paragraph 387 applies both to the nitric and the sulphuric acid, rendering it free of duty.

The Government contends this acid as imported is a mixed acid or a chemical mixture within the provisions of paragraph 5, and dutiable at 15 per cent ad valorem.

Mr. Wollenberg, the general manager of the protestants, and an expert chemist, testified that the nitric acid was used in the manufacture of explosives at the works of the Aetna Explosives Co., and was of a high grade. He testified that the shipment contained 20.16 per cent of sulphuric, 72.28 per cent of nitric acid, the balance being water; that the proportions of value were—sulphuric acid 5.04 per cent, nitric 94.96 per cent.

The witness further stated, in reference to the transportation in

tank cars, that a sufficient number of glass carboys could not be had. The following is an extract from his testimony:

> Q. You said, Mr. Wollenberg, that this was added solely for the purpose of making it possible to transport the nitric acid in tank cars, did you not?—A. I did.
>
> Q. In other words, what you desired to import was nitric acid?—A. It was.
>
> Q. And I take it that you could not import nitric acid in tank cars except by the addition of sulphuric acid to a greater or less extent?—A. It would be impossible as a practical matter because the nitric acid would dissolve the tank car.
>
> Q. The nitric acid would eat the iron of the tank car?—A. Yes, sir.
>
> Q. Well, does the addition of sulphuric to the nitric acid make it so that the resultant mixture has less effect upon the tank car, less corrosive effect?—A. It does, and there are certain proportions which make the effect on the tank car practically negligible, although there is always a slight amount of corrosion in the shipment of any acids.
>
> * * * * * * *
>
> Q. * * * May I ask you to explain, Mr. Wollenberg, the chemical process by which the addition of sulphuric acid to the nitric produces the effect that the corrosive action on the tank car is less than that of nitric alone?—A. Well, explaining it in a very simple way for a layman, I might say that anhydrous or perfectly dry nitric acid, that is, not containing any water, would not have any substantial effect on iron. Now, sulphuric acid has, what I can call in popular language, a greater affinity for water than nitric has, and in a mixture of the three substances, nitric acid, sulphuric acid, and water, the sulphuric acid has the effect of holding the water in such a way that the nitric does not act, does not in effect have the water with it, and therefore does not act upon the iron. The exact amount of sulphuric acid that has to be present to accomplish this purpose will depend on the amount of water that is with the nitric acid, on the temperature to which the mixture is exposed, and on the degree of protection which is desired. There is no absolutely sharp line where the action of nitric on iron definitely starts or definitely is prevented.

This statement of the witness clearly indicates why the sulphuric acid was added. It was not anhydrous, or perfectly dry nitric acid. As shown by this testimony, it was a necessity to add the sulphuric acid to permit of its transportation in tank cars. It is conceded in the testimony that nitric acid can be shipped by other means than tank cars. Its use at the time of the enactment of the law we are now construing was infinitessimal as compared with its use at the time of shipment.

On arrival of the merchandise at the importers' plant, instead of

extracting the sulphuric acid from the merchandise the importers added more sulphuric acid. On this point the witness testified:

> When this acid reached our explosive plants additional quantities of sulphuric acid, either as oleum or sometimes in small quantities as weaker sulphuric acid, was added to it to make the final mixture that was required in our processes.

The testimony then continues:

> Q. To make the final acid mixture which goes into the making of munitions? A. That is correct.
>
> Q. Could it have been used in making these munitions in the condition in which it was when you imported it? A. It could not in any of our processes.

That may be true; but the mixture of the sulphuric with the nitric acid in Canada was not a vain thing. It may have been necessary in order to transport it in tank cars, but even if it had come in in a dry state it could not have been used without the addition of sulphuric acid; therefore we have the proposition that the addition of the sulphuric acid served an additional purpose than that of transportation.

All percentages of the nitric and sulphuric acids have reference to weight and not to value. Admittedly the value of the nitric is far beyond that of the sulphuric acid, but in arriving at the quantity to be used to make an explosive it is not the value of the acid that is estimated but the weight of each.

As to the meaning of the term "mixed acid," the testimony of the witness Wollenberg is as follows:

> Q. Are you familiar with the term mixed acids? A. I am familiar with a term mixed acid.
>
> Q. How has that term been used in your experience? A. It has been used in my experience in two ways; that is why I hesitated to answer the question.
>
> Q. All right; give me the first one. A. In a broad way it is used to indicate any mixture of nitric and sulphuric, and, so far as I know, not other acids. In a narrow way, and due apparently to its connection over a considerable period of time with certain mixtures, it has come to be associated with acids that are made up and applied to certain operations. I can amplify by saying that in our own business we qualify the term and we will say nitro-cotton mixed acid to indicate an acid which has been mixed in the proportion which is correct for nitrating cotton, and if we want to speak with any definiteness whatever we have to qualify the term mixed acid.
>
> Q. In the first sense in which you used it as applying to any mixture of nitric and sulphuric acids, how long have you known the term mixed acids in that sense? A. Well, my first connection with the acid industry was my connection with this company in 1916.

* * * * * * *

Q. And so-called mixed acid is commonly used for nitrating purposes, isn't it? A. I think that is the commonest use of it.

Q. And that is the most common designation of mixed acid, nitrating acid? A. The two may be synonymous in cases, but they are not always.

Gen. Appr. McClelland. That don't answer the question.

(Last question repeated by the reporter.)

A. Well, I wouldn't say which was the most common.

Q. (By General Appr. McClelland.) Well, are they used interchangeably? A. A nitrating acid is always a mixed acid.

Q. Can't you answer my question? A. Not entirely, not absolutely interchangeable, in answer to your question.

By Mr. Lawrence:

Q. The mixed acid referred to in the Interstate Commerce Commission regulations are mixed nitric and sulphuric acids, aren't they? A. I don't recall the language. * * * (Witness looks at Exhibit 2.) * * * That is true.

The witness was then interrogated as to whether or not it is a chanical mixture. The testimony is as follows:

Q. What is the chemical formula for the commodity covered by the schedule, Exhibit 1—that is, the shipments here in question? A. I don't think that anyone would attempt to write a chemical formula for it as it is, as there are more than one substance present.

Q. How are they combined? A. Well, there is a—my—so far as my knowledge or understanding extends, they are simply there as a mixture, although I believe there are some grounds for believing that some reactions may take place, but I can't testify on that point at all.

Q. You have no doubt it is a mechanical mixture, have you? A. That is my understanding of the condition.

Q. But as to whether there may be a chemical reunion you are not prepared to say? A. I am not.

Q. Well, it was a mechanical mixture of what? A. I can say there was—to what acid are you referring?

Q. I am referring to the thing you and I have been talking about for the last 10 minutes, this mixture covered by these importations. A. In this importation there was a mixture of nitric acid, sulphuric acid, and water.

Q. So that it was a mixture of H_2SO_4, plus HNO_3 plus H_2O, wasn't it? A. That is correct.

Q. Now, are you familiar with the general uses of nitric acid not in association with other acids—that is, nitric acid alone? A. No; I am not.

Q. Do you know that nitric acid does subserve many uses by itself? A. I presume that it has a number of uses, but I do

not believe that there is any large tonnage, any large quantity of the nitric acid production of this country, for example, used by itself.

As to its use in the imported condition, the witness states:

Q. Could you use this mixture practically for purposes to which nitric acid alone is commonly put? A. I should think not.

Q. Why not? A. I would presume that if the use, if a particular use, requires nitric acid by itself, that the sulphuric acid present might either be a detriment or an obstruction.

Q. It would interfere with the proper chemical reactions, wouldn't it? A. I cant' answer that without a knowledge of the reactions that you speak of; but it would appear so. There are many reactions in which nitric acid plays a part; in fact, most of the nitrating operations which are part of the explosive industry, and in those the presence of sulphuric plays a part, and there, within certain limits, the addition of a little more or a little less sulphuric might not interfere with the reaction.

Q. It would follow, then, from what you have said that this mixture can not be used for either purposes to which sulphuric or nitric acid alone are put? A. It certainly does, if it is properly used alone.

Q. If what is properly used alone? A. If either the nitric or the sulphuric is properly used alone in these purposes you speak of, then obviously a mixture with something else in it ought not to be used, and it will not give the same or proper results.

Q. That is, this mixture would not give you the result which you would expect to obtain by the use of either sulphuric or nitric acids alone? A. I wouldn't expect it to do the same as either of them alone.

Therefore the testimony clearly sustains the proposition that the mixture, whether mechanical, chemical, or otherwise, can not be used in the form in which imported for the purpose for which nitric or sulphuric acid alone can be used.

The question naturally arises, Did not Congress have in mind at the time of the passage of this act a mixed acid entirely different from either nitric or sulphuric acid, and by reason of such difference that it, as a mixed acid, should be dutiable? It seems to us this testimony clearly and beyond question establishes that fact.

While it is contended by the importers the mixture was for the purpose of transportation, and that alone, yet there was no effort to free the nitric acid of the sulphuric after it arrived in this country. It further appears that transportation was not the only reason for mixing the acids in Canada. On this point the witness states:

The fundamental purpose was to ship nitric; incidentally, to do it we had to conform with the existing railway regulations. We didn't ship acid so as to have something that would con-

under the Interstate Commerce Commission regulations; we shipped acid because we had some nitric acid we wanted down here to make munitions of, and in doing that we succeeded in meeting the requirements of the Interstate Commerce Commission permitting that.

The testimony on this point then continues as follows:

Q. Didn't you say the purpose of the mixture at the proportions stated in Exhibit 1 was solely for the purpose of conforming with the Interstate Commerce Commission regulations?—A. I may have stated that, but that does not go back to the fundamental purpose. Our purpose was to ship nitric acid to this country, to Emporium, and incidentally in order to do that we had to make this mixture to meet the requirements of the Interstate Commerce Commission.

There is the entire proposition. While it is true that in transporting this article, by reason of its corrosive effect on iron the Interstate Commerce Commission did by regulations provide how it should be shipped: if in tank cars, with the addition of a minimum amount of sulphuric acid; yet this witness unequivocally states that while they complied with the regulations of the Interstate Commerce Commission the compliance was incidental, that the purpose was to obtain nitric acid at the importers' plant for use in manufacturing explosives, and the addition of the sulphuric acid did not take away from the nitric acid a single property it possessed for which it was intended to be used. It had all the power and strength required, and if sulphuric had not been added in Canada it would have been in Emporium. The purpose was to obtain nitric acid with which to manufacture explosives.

As to its shipment in glass carboys the witness states:

Q. Well, you know, do you not, that nitric acid is susceptible to transportation in glass carboys?—A. Within certain limitations it is.

Q. And it is not necessary to add sulphuric acid to it, is it?—A. If you can meet the limitations, it is not necessary to have sulphuric acid.

Q. You know that the Interstate Commerce Commission regulations do provide for the shipment of nitric acid in glass carboys, don't they?—A. I do.

Q. And the same is true of sulphuric acid, isn't it?—A. It is.

We need not further dwell on the question as to why shipments were made in tank cars rather than in glass carboys. It was a matter of convenience to the company itself. In the first place, 100,000 pounds of this merchandise could be placed in a tank car. If put in glass carboys, 28,000 pounds would fill a car. It was clearly more economical to use the tank car. The regulations of the Interstate Commerce Commission as to the shipment of the mixture do not change its character nor give it a different classification. In the ex-

ercise of its duties the Interstate Commerce Commission provides rules and regulations for the safe shipment of merchandise. This merchandise, so highly explosive, would destroy that in which it was contained. A rule was provided for the addition of a minimum percentage of another ingredient that would counteract the corrosive effect of the nitric acid. The resultant product became a mixed acid and not nitric acid in its natural state.

We further quote from the testimony of the witness Wollenberg, as follows:

> Q. (By General Appraiser Brown.) What proportion of the chemically pure variety of nitric acid do you use in your laboratory; how much water do you use?—A. Commonly the nitric acid used in the laboratory is 42° Baumé, which has 67 per cent in it.
>
> Q. That is all?—A. That is the common laboratory reagent you get.
>
> Q. (By Mr. Platt.) Sixty-seven per cent nitric?—A. Sixty-seven per cent nitric. As to the laboratory where you were doing work on certain high explosives or work of that sort you might have some C. P. nitric acid, that means chemically pure, or of a strength as high as 90 per cent, but it is very unlikely you would have anything higher than that.
>
> Q. Then the ordinary commercial nitric acid used in commerce usually has a strength of about 67 per cent nitric?—A. That is correct, and as an evidence of that I would like to point to the fact that the Government in fixing the price of nitric acid fixes a price on this dilute acid which has about 67 per cent nitric in it, and then states that other strengths are to be appraised according to the nitric contents. But in selecting the nitric acid to put a price on they selected the one that has 67 per cent of nitric and 35 per cent water in it.
>
> Q. And that is the product which is usually shipped in glass carboys?—A. I think that probably 99 per cent or more of the shipments in glass carboys are either that product or a somewhat weaker one.
>
> Q. That is, containing less nitric?—A. Less than 67 per cent.
>
> Q. (By General Appraiser McClelland.) The Government does not use the mixture of nitric and sulphuric as a basis for fixing prices?—A. Not as a basis for fixing prices.

As to the commercial meaning of mixed acids it was testified as follows:

> Q. Now, has the term mixed acid any well known and definite commercial meaning? * * *—A. So far as I know it has no application to a specific composition of acids, and it would always be necessary in the trade to specify the composition of the mixed acid which was under discussion or required or bought or sold.
>
> Q. (By General Appraiser McClelland.) There is no standard for mixed acid?—A. There is no standard mixed acid.

Q. Every mixture may be different from any other mixture? A. Exactly.

It further appears from the testimony that shipments of nitric acid before the war in carload lots was not usual. The testimony on that point is as follows:

Q. Could you imagine outside of war conditions the use or the transportation of it in carload lots? A. I don't think it occurred to any extent before the war conditions.

* * * * * * *

Q. As I understand you, prior to 1913 the medium of transportation was usually carboys or glass jars? A. I think it was because the high-strength nitric acid was not required in the arts; and those plants like high-explosive plants and dynamite plants which would want high-strength nitric acid invariably made it themselves. It wasn't the economic thing to do to make it somewhere else and bring it to your plant after it was made in those large quantities in high strengths, and that still is the economic thing to do, but special conditions have caused this to be transported.

It further appears in the testimony that the raw material out of which this nitric acid was made was shipped from Emporium to Drummondville, Canada, there manufactured, and then shipped back. The raw material from which nitric acid is manufactured is nitrate of soda and sulphuric acid. On this point the testimony is as follows:

Q. What objection is there, if any, to bring that material down from Canada and making your nitric acid in Pennsylvania? A. You refer to the period during which we shipped it down?

Q. Well, during the past year? A. There were no facilities in our possession in the United States where it could be made.

Q. In other words, you mean you were making nitric acid to the capacity of your plant? A. Exactly.

Q. If this plant were larger, you could just as well bring the raw materials down and make it at your plant in Pennsylvania? A. Yes; as a matter of fact the raw materials don't originate entirely in Canada; some of them were taken up there.

Q. But they get to the plant at Drummondville, and there you make it up into nitric acid? A. Yes; the sulphur that makes the sulphuric acid for the nitric acid goes from our works; the nitrate of soda comes from Chile.

Q. So you are shipping those things to Canada to make into a finished article which you reimport back into Emporium; is that right? A. That is correct, because of lack of the manufacturing facilities in the United States.

The testimony of this witness clearly established this product as a ...ed acid; that it is not used for the purpose that either nitric or ...phuric acid is used alone; that it is used in the manufacture of

explosives in the form as imported, with the addition of more sulphuric acid.

It further appears that in the trade and commerce of this country this merchandise is recognized and known as "mixed acid."

Mr. Klipstein, in his testimony, states:

> Q. Mr. Klipstein, when you buy nitric acid mixed with sulphuric acid what do you call that mixture? A. Well, we call it mixed acid.
>
> Q. Mr. Klipstein, you say you call it mixed acid; is that all you call it, simply mixed acid? A. It is known as mixed acid.
>
> Q. Well, don't you have to add to it the percentage of one and the other? A. Well, we buy mixed acid, as I told you, for two different purposes, according to whether it is first or second nitration.
>
> Q. And do you call both mixed acid? A. We call both mixed acid.
>
> Q. Without any further designation? A. Without any further designation.

The witness Mr. Waugh practically testified to the same effect.

Ordinary commercial nitric acid, 1.42 specific gravity, distills at 123° C. and contains from 68 to 69 per cent of HNO_3, and corresponds nearly to the formula $2HNO_3$ plus $3H_2O$. This is the nitric acid of commerce. The combination is acid and water and evidently is the commodity referred to in paragraph 387. A very concentrated acid of 1.49 to 1.50 specific gravity contains about 49 per cent of HNO_3. This is practically the article under consideration without the addition of the sulphuric acid. For transportation it becomes necessary to add sulphuric acid to offset the harm it may do to steel cars. After thus being diluted, or its wings clipped, it becomes another commodity, to wit, mixed or chemical acid, the commodity under consideration and that provided for in paragraph 5.

Congress had something in mind when it provided that mixtures, whether chemical or otherwise, should be dutiable.

The act of 1897, paragraph 3, provided:

> 3. Alkalies, alkaloids, distilled oils, essential oils, expressed oils, rendered oils, and all combinations of the foregoing, and all chemical compounds and salts not specially provided for in this act, twenty-five per centum ad valorem.

This paragraph did not include a mixture. It had reference to chemical compounds and salts.

The act of 1909 provided:

> 3. Alkalies, alkaloids, distilled oils, essential oils, expressed oils, rendered oils, and all combinations of the foregoing, and all chemical compounds, mixtures, and salts, and all greases, not specially provided for in this section, twenty-five per centum ad

valorem; chemical compounds, mixtures, and salts containing alcohol or in the preparation of which alcohol is used, and not specially provided for in this section, fifty-five cents per pound, but in no case shall any of the foregoing pay less than twenty-five per centum ad valorem.

This section provided for a duty on chemical compounds, mixtures, and salts. For the first time the term "mixture" is used, there being a comma between the words "compounds" and "mixtures," indicating an intent to tax a mixture, whether chemically compounded or not.

The act of 1913 is much more comprehensive. Paragraph 5 provides:

5. Alkalies, alkaloids, and all chemical and medical compounds, preparations, mixtures and salts, and combinations thereof not specially provided for in this section, 15 per centum ad valorem.

By this provision it was clearly the intent of the Congress to levy a duty on all chemical and medicinal compounds, preparations, mixtures, and salts. Therefore, since 1897 there has been an enlargement of the statute with reference to chemical and medicinal compounds, preparations, and mixtures.

A mixture is very clearly defined by the Century Dictionary as follows:

4. In chem., a blending of several ingredients without chemical alteration of the substances, each of which still retains its own nature and properties; distinguished from combination, in which the substances unite by chemical attraction, lose their distinct properties, and form a compound differing in its properties from any of the ingredients.

This definition may not entirely fit the present substance, as it would seem to be a chemical mixture. That it is a mixture is proven beyond conjecture.

Paragraph 387 of the act providing for free entry of nitric acid does not refer to a mixture. It refers to the acid in its natural state, as used in the commerce and trade of this country as chemically pure as it is possible to produce it.

This conclusion is supported by the case of Strohmeyer & Arpe v. United States (2 Ct. Cust. Appls., 285; T. D. 32035). The subject of that case was a chemical mixture, and classified under the provisions of paragraph 3 of the tariff act of 1909, which we have heretofore quoted, at 25 per cent ad valorem. The importers contended it was not a chemical mixture. It appears from the opinion that the Board found that the importation, which was invoiced as lime powder, consisted of a mixture of lime, carbonate of lime, and manganese oxide. On the evidence the board found it was a chemical mixture. On appeal the importers strenuously contended the Board

was wrong, and the court elucidated the difference between a chemical compound and a mixture, and stated:

> As we have already observed, a chemical compound necessarily implies not a mere mingling of components, but a chemical combination of them, resulting in their destruction as distinct entities and in the development by chemical reaction of a new substance possessing properties radically different from those of its constituent elements. McKesson v. United States (1 Ct. Cust. Appls., 213–216). On the other hand, in chemistry and mineralogy the term "mixture" carries with it the idea that the corporeal integrity of the ingredients has been preserved and that the incorporation has not lost to them their individual properties and separate chemical nature. (Webster's International Dictionary; Standard Dictionary; Century Dictionary.) This distinction between a mixture and a chemical compound is so well known and has been so frequently pointed out by the decisions that it is inconceivable that Congress should have so mistaken the meaning of the terms as to assume that they were equivalents and might be used interchangeably. In re Auffmordt & Co. (T. D. 11074); Levi v. United States (126 Fed., 420; T. D. 25050); In re Isaacs, Vought & Co. (T. D. 25410); In re F. Behrend (T. D. 25733); In re F. R. Philipps & Sons (T. D. 27051); United States v. Proctor (145 Fed., 126; T. D. 27151). The very fact that there is a difference between a mixture and a chemical compound, and that disputes arose as to whether importations belonged to one category or the other was, we think, the cause which induced Congress to amend paragraph 3 of the tariff act of 1897 by making provision therein for chemical mixtures. We are of the opinion that the amendment was not a purposeless bit of legislative redundancy, but was the result of a long experience which justified Congress in concluding that litigation would be best avoided by subjecting to the same rate of duty articles the true nature of which had been a frequent subject of controversy.

How appropriate to the present case is this conclusion of the court. It is claimed that we have taken a different view in prior decisions. In the Benzol Products Co.'s case, G. A. 7828 (29 Treas. Dec., 763), the question was not as fully presented as in this case. We did say that nitric acid containing about 3 per cent in value of sulphuric acid, added solely for the purpose of safe transportation, was not within the term "chemical mixture," as used in paragraph 5. If that decision is to be taken as a precedent to warrant the holding that where 20 per cent of sulphuric acid by weight is added to the nitric acid for the purpose of safe transportation the mixture is free, then it was wrong and should be overruled.

In the remaining cases called to our attention, viz, In re protest 803766 of the Nonnabo Chemical Co., G. A. 8082 (T. D. 37285; 33 Treas. Dec., 61), and In re protests 799171, etc., of C. J. Tower et al., Abstract 42132 (34 Treas. Dec., 697), it was found as a fact that the

mixtures of acids were in substantial proportions, and we did not follow the Benzol case.

On this record, so full and complete, we find that the merchandise imported was a mixture and fell directly within the provisions of paragraph 5. It is not a question of percentage; it is a question as to whether or not the respective acids were mixed. To fall within the provisions of paragraph 387, the nitric acid must be the article of commerce known as nitric acid. If it has other ingredients mixed with it, the history of legislation on this subject for the last quarter of a century demonstrates it was the intent that such mixture becomes thereby dutiable.

The collector's action was correct. The protests are overruled.

CHAS. P. McCLELLAND,
J. B. SULLIVAN,
Board of U. S. General Appraisers.

Dissenting opinion.

BROWN, *General Appraiser:* This suit was brought by the importers invoking the statutory remedy provided by the customs practice act of June 10, 1890, to procure the refund of duty claimed to have been illegally exacted by the collector of customs at the port of Ogdensburg. The case was tried, argued, and submitted before Board 1 at the regular New York docket.

The merchandise, the classification of which is in issue, was assessed for duty under the provision of paragraph 5, act of 1913, reading:

> 5. Alkalies, alkaloids, and all chemical and medicinal compounds, preparations, mixtures, and salts, and combinations thereof, not specially provided for in this section, 15 per centum ad valorem.

The protestants ask for refund upon the claim that the goods are free under the provisions of paragraph 387 of the free list, reading:

> 387. Acids: Acetic or pyroligneous, arsenic or arsenious, carbolic, chromic, fluoric, hydrofluoric, hydrochloric or muriatic, nitric, phosphoric, phthalic, prussic, silicic, sulphuric or oil of vitriol, and valerianic.

The testimony establishes the following facts:

(1) The merchandise consists of nitric acid, which in a commercial condition always contains a certain amount of water, to which has been added a certain percentage of sulphuric acid, about 20 per cent by weight and about 5 per cent by value, for the purpose of protecting the tank car in which the merchandise is shipped from corrosion.

(2) That the nitric acid was imported for use in the manufacture of explosives during the prosecution of the war.

(3) That at the time of shipment there were not sufficient glass

carboys in existence to have supplied glass containers for the shipment of this merchandise.

(4) That the regulations of the Interstate Commerce Commission in force at the time prohibited the importation of nitric acid alone in tank cars, but required the addition of sufficient sulphuric acid to protect the car from corrosion, and thus to prevent fire danger, substantially similar regulations being in force at the time of the passage of the act of 1913.

(5) That merchandise containing nitric and sulphuric acids in the percentages here shown is not in condition for use in the manufacture of explosives or any other known trade purpose, but that, on the contrary, in order to use it commercially a much larger proportion of sulphuric acid must be added thereto.

(6) The importing concern imported this nitric acid from Canada for and at the specific request of the United States Government to meet an emergency call for the rapid manufacture of explosives during the prosecution of the war and brought it in for this purpose in tank cars with sulphuric acid as the only then available way of packing and protecting it.

In the practical commercial circumstances which surround the use, importation, and shipment of nitric acid we must hold in this case:

(1) Either that all nitric acid, shipped in tank cars, mixed with sulphuric acid, which Mr. Beistle, an expert in the Bureau of Explosives, testified composed about 75 per cent of the total shipments of all nitric acid in whatever form or strength and nearly 100 per cent of the total shipments of strong nitric acid (record, p. 141), was intended by the Congress to be taxed at 15 per cent as a chemical mixture because of the sulphuric acid necessarily added to thus ship it, and that the remainder, almost a negligible per cent of strong itric acid and about 25 per cent of the total shipments of both weak and strong nitric acid, was the only thing intended to be admitted free under the provision for nitric acid.

(2) Or that both classes are free of duty in spite of the presence of sulphuric acid if added solely as a necessary protection to the container.

The latter is the view that the board has heretofore adopted as the more reasonable interpretation of the words of the Congress which are always to be taken as speaking in the language of commerce and as dealing with the practical affairs of everyday commercial men rather than in the technical terminology of science.

A too literal or too narrow construction, then, will not prevail as matter of law if the consequences of such interpretation produce an artificial or incongruous result foreign to a reasonable purpose in the legislative mind to deal in a sensible way with the practical affairs of business. The Congress was not intending to play with the rights of the citizens engaged in importing such merchandise, nor dealing with distinctions so nice and so technical that if taken literally they would produce inequalities in the taxation of the same material growing merely out of the kind of container and the incidental protection thereof from danger in which the merchandise should happen to be shipped.

So the Board has held in the case of the Benzol Products Co., G. A. 7828 (29 Treas. Dec., 763), that if the record showed that the sulphuric acid was added merely to protect the tank car, and in the quantity or proportions so shipped was not a mixture ready for use commercially without further addition or manipulation, it was not a chemical mixture within the meaning of paragraph 5, but remained free of duty as nitric acid, stating:

BROWN, *General Appraiser:* The merchandise in question consists of nitric acid, containing also a small quantity of sulphuric acid, shipped in tank cars from Capelton, Canada, to the port of Newport, Vt. It was classified for duty as a chemical mixture under paragraph 5, act of 1913. It is claimed to be free as specially enumerated under paragraph 387 of said act.

The evidence of the importers' witness, which is uncontradicted, shows that a small quantity, 3 per cent by value, of sulphuric acid is added for the purpose of protecting the tank car from the effect of the nitric acid, and this is claimed to be in conformity with a regulation of the Interstate Commerce Commission requiring this addition of sulphuric acid before nitric acid can be shipped in tank cars. The evidence also shows that the proportion of sulphuric acid here found in the mixture has no relation to any trade use. That is, it would require the addition of much more sulphuric acid to make the mixture usable for trade purposes. The evidence to this effect is uncontroverted.

The question then resolves itself as to whether the substance is nitric acid within the meaning of the free-list provision or whether, by reason of this mixture of sulphuric acid, added under the circumstances as above stated, it becomes a chemical mixture within the meaning of paragraph 5.

Had the nitric acid been brought in in certain glass containers instead of tank cars it would not have required the sulphuric acid for protecting the containers, but we do not believe that in any proper sense this importation can be called a chemical mixture within the purpose and intent of Congress in enacting these provisions. It is without the spirit of the term "chemical mixture" as used in paragraph 5, and for all practical purposes remains nitric acid.

It is worth noting that sulphuric acid is also free under paragraph 387, and it is unnecessary to decide in this case whether or not sulphuric acid and nitric acid, mixed in substantial proportions for some chemical or trade purpose other than mere protection in transportation, would be free.

The claim for free entry under paragraph 387 is sustained.

But, on the other hand, we likewise held in the case of Nonnabo Chemical Co., G. A. 8082 (33 Treas. Dec., 61), that if the record showed, as it did in that case, that, in the proportions of nitric and sulphuric acids there shown, the mixture was a commercial mix-

ture ready for use as such, it should be taxed as a chemical mixture within the meaning of said paragraph 5, saying:

The importers claim, first, that, as nitric acid and sulphuric acid are provided for eo nomine in paragraph 387, a mixture (as the evidence shows) in the proportions of about 48 per cent nitric acid and 47 per cent sulphuric acid should receive the benefit of the free-list provision.

The testimony shows that the acids are mixed in these proportions for the purpose of the most economical use and also to secure nitric acid of the requisite concentration to be used in the factory. It is principally used for fortifying exhausted acids, so that they may be used again for the purpose of nitrating cotton to be used as explosives. It is mixed together to protect the tank car in which pure nitric acid could not be shipped.

As to the first contention, the mixture, forming a distinctly different customs classification, removes this article from the benefits of the free-list provision. It is true that we held, in the case of Benzol Product Co., G. A. 7828 (T. D. 36000; 29 Treas. Dec., 763), an appeal arising at the port of St. Albans, Vt., that nitric acid shipped in a tank car mixed with a negligible quantity (3 per cent) of sulphuric acid (solely for the purpose of protecting the tank car from corrosion, was nevertheless classifiable as nitric acid under the free-list provision under the principle de minimis non curat lex. But that case is not controlling in the case at bar, because here we have a mixture of substantial proportions, and also because of the further fact that it is used in the form of the mixture and in the proportions as imported for manufacturing purposes, which was not true in the Benzol Products case.

Again, in the Tower case, protest 799171, etc., following the principle of the Nonnabo Chemical Co. case, we overruled the protests, Abstracts 42132 (34 Treas. Dec., 697), where the percentages ran from about 45.5 sulphuric to 49 nitric acid (record, p. 11), practically, as stated by counsel for the importers in his opening statement, half and half (record, p. 1).

Therefore, in conformity with the principle governing the cases already decided, as applied to the facts shown unmistakably by this record, judgment should be rendered in favor of the importers, sustaining the protests and directing refund accordingly.

The chemical schedule being one which is assigned to the writer, the above was written as for the Board's opinion, but was rejected by the majority.

Whatever they call it in their orders, the merchants dealing with this substance mixed in the proportions here invoked manufacture it, import it, and use it for the purposes for which nitric acid is used in the making of explosives, and for no other purposes.

Therefore, to classify it because of an expression used in the orders and invoices as "mixed acids," a term not used in the act, would be to set up a technical scientific or chemical term as the test of classification rather than the commercial use and practice.

Moreover, assuming but without admitting that the use of the expression "mixed acids" in dealing with it would bring it under the term "chemical mixture," even then this term would not control its classification, because at the same time, for all practical commercial purposes, it also remains "nitric acid," which is the *narrower term*, and as such intended by the Congress to be admitted free.

If the majority means to rest their conclusion upon the commercial testimony, such testimony would have to show not only that it was bought and sold as mixed acids, but also that for business purposes it had ceased to be commercial nitric acid.

GEO. STEWART BROWN,
General Appraiser.

Importer: Aetna Explosives Co., Inc.

Protest.	Protest.
850017/29	850237/32
850018/30	850375/34
850184/31	850821/35
850236/33	850822/36

JUDGMENT ORDER.

At a term of Board One of United States General Appraisers, held in the city of New York on the 26th day of February, 1919.

Present:

General Appraisers McCLELLAND, SULLIVAN, BROWN.

Protest Nos. 850017, etc.

AETNA EXPLOSIVES CO.

vs.

THE UNITED STATES.

The above-entitled cause having regularly come on to be heard, and the Board, in its decision dated the 26th day of February, 1919, having determined the law and facts in favor of the Government; it is hereby ordered, adjudged, and decreed this 26th day of February, 1919, that the protests in this case be and the same are hereby overruled.

CHAS. P. McCLELLAND,
Chairman, Board One.

[SEAL.] By D. P. DUTCHER,
Chief Clerk.

Endorsed: No. 1974. United States Court of Customs Appeals. Filed May 2nd, 1919. Arthur B. Shelton, clerk.

Extract from Clerk's Minutes.

UNITED STATES COURT OF CUSTOMS APPEALS.

THURSDAY, OCTOBER 16, 1919.

At a session of said court continued and held at the city of Washington, pursuant to adjournment, on this 16th day of October, A. D. 1919.

Present the Honorable Robert M. Montgomery, Presiding Judge, and the Honorables James F. Smith, Orion M. Barber, Marion De Vries and George E. Martin, Associate Judges.

The court was opened for business in due form

* * * * * * *

ÆTNA EXPLOSIVES COMPANY, Appellant, v. THE UNITED STATES, Appellee.	No. 1974.

Said cause came on to be heard before the court and after hearing the arguments of counsel the case was taken under advisement by the court.

* * * * * * *

(Signed) ROBERT M. MONTGOMERY,
Presiding Judge.

Request that Court's Decision be Deferred.

UNITED STATES COURT OF CUSTOMS APPEALS.

AETNA EXPLOSIVES COMPANY, Appellant, v. THE UNITED STATES, Appellee.	No. 1974.

WHEREAS, the appellant herein has requested the Attorney General to file with the Court of Customs Appeals a certificate that the above-entitled case is of such importance as to render expedient its review by the Supreme Court; and,

WHEREAS, the Solicitor General is desirous of having sufficient time adequately to consider the application;

NOW, THEREFORE, it is respectfully requested that this court defer decision herein until the Attorney General shall have passed upon said application.

In case this request be granted, the court will be informed when the Attorney General has passed upon said application.

Dated, New York, N. Y., October 30, 1919.

PRATT, KOEHLER & BOYLE,
Attorneys for Appellant.

BERT HANSON,
Assistant Attorney General.

Filed United States Court of Customs Appeals Oct. 31, 1919.

ARTHUR B. SHELTON,
Clerk.

Certificate of Importance.

UNITED STATES COURT OF CUSTOMS APPEALS.

AETNA EXPLOSIVES COMPANY, Appellant, v. UNITED STATES, Appellee.	No. 1974.

To the Honorable
The Judges of said Court:

In accordance with the provisions of the Act of Congress establishing the Court of Customs Appeals, I hereby certify that in my opinion the case above-stated is of such importance as to render expedient its review by the Supreme Court of the United States in the manner provided by said Act.

This 22nd day of December, 1919.

(Signed) A. MITCHELL PALMER
Attorney General.

Filed United States Court of Customs Appeals Dec. 26, 1919.

ARTHUR B. SHELTON,
Clerk.

Court's Opinion.

UNITED STATES COURT OF CUSTOMS APPEALS.

OCTOBER TERM—1919.

ALENA EXPLOSIVE COMPANY v. THE UNITED STATES.	Suit No. 1964 Cal. No. 16.

MONTGOMERY, Presiding Judge, delivered the opinion of the court:

The merchandise, the duty upon which is the subject-matter of this case was assessed for duty at 15 per cent ad valorem under paragraph 5 of the tariff act of 1913 as a chemical mixture. It was claimed by the importer to be free of duty under paragraph 387 as nitric acid or as nitric acid and sulphuric acid. This claim of the importer was overruled by the decision of the board, General Appraiser Brown dissenting. The case is brought here for review in the regular way.

The facts relating to the importation may be stated as follows: The importer maintained a plant at Emporium, Pa., for the manufacture of high explosives. For use in this business, nitric acid in very considerable quantities was a prime

necessity. This nitric acid was imported from its plant at Drummondville, Canada. For the purpose of protecting the iron tank cars in which the necessities of their business required them to import this nitric acid, it was necessary to add about 20 per cent of sulphuric acid. The regulations of the Interstate Commerce Commission in force at the time required that this addition to the nitric acid should be made before shipment in tank cars would be permitted. The record in the case shows that only enough sulphuric acid was added to comply with this regulation, and the question involved in this case is whether within the fair import or the intendment of paragraph 5 of the tariff act of 1913, this importation, consisting of nitric acid thus diluted or mixed with the sulphuric acid, is a chemical mixture.

This provision reads:

> Alkalies, alkaloids, and all chemical and medicinal compounds, preparations, mixtures and salts, and combinations thereof not specifically provided for in this section, 15 per centum ad valorem.

Without setting forth the regulations of the Interstate Commerce Commission at length, it will suffice to say that under the regulations nitric acid of any specific gravity may be shipped in glass bottles with ground glass stoppers of a capacity not exceeding 7 pounds of acid; that nitric acid of a

specific gravity less than 1.43 may be shipped in glass carboys well cushioned by material that will not be ignited by the acid; that when the specific gravity is between 1.43 and 1.49, the acid may be shipped either in glass carboys well cushioned by incombustible packing material, provided that they are packed in tight cylindrical iron cases covering the bottom and sides and fitting tightly in outside wooden boxes, or in the aforesaid glass bottles with ground glass stoppers well cushioned by material that will not be ignited and packed in strong wooden boxes, barrels, or kegs; and that when the specific gravity of the nitric acid exceeds 1.49, it can be shipped only in the aforesaid glass bottles, each bottle packed separately in a tightly closed metal container and well cushioned by material that will not be ignited by the acid.

Nitric acid mixed with sulphuric acid may be shipped in iron drums, or in tank cars, or in glass carboys packed as is required when nitric acid of a specific gravity between 1.43 and 1.49 is shipped, i. e., well cushioned by incombustible packing material in a tight cylindrical iron case covering the bottom and sides and fitting tightly in an outside wooden box.

The nitric acid manufactured by the importer at its plant in Canada, the subject of the protests here involved, was the strongest made, viz., 89.55 per cent. Its specific gravity was 1.4904, apparently falling just outside the limitation for ship-

ment without the admixture of sulphuric acid in any other than the small glass bottles.

Mr. Wollenberg, the importer's general manager, testified that he had tried to obtain enough carboys, but that he had found it impossible to obtain them.

Prior to the opening of the European war in 1914, about 75 per cent of all the nitric acid that was shipped in the United States was shipped in tank cars mixed with sulphuric acid; the balance was shipped in glass carboys as straight nitric acid without the admixture of any sulphuric acid. There was never any noticeable movement of high strength, i. e., 90 per cent nitric acid in glass carboys, practically all such shipments in glass carboys being shipments of commercial, i. e., 67 per cent nitric acid, without the admixture of any sulphuric acid.

The shipments in tank cars consisted of nitrating acids and fortifying acids. Nitrating acids contain from 60 per cent to 75 per cent of sulphuric acid, fortifying acids from 47 per cent to 50 per cent of sulphuric. The former are used directly in the manufacture of nitroglycerine, or nitrocellulose or other nitro explosives, the latter in bringing up to a greater strength spent acids, i. e., mixtures of nitric acid, sulphuric acid, and water in which the nitric acid has been decreased by use and the water increased to such an extent that they can no longer be used. No other mixtures of other percentages of nitric acid and sul-

phuric acid were shipped in tank cars prior to the war, and no mixtures containing less than 45 per cent of sulphuric acid.

The European war caused an enormous expansion in the explosive industry in this country and a tremendous increase in the output of both nitric and sulphuric acids. This necessitated the transportation of nitric acid in large quantities, with the result that inquiries were made of the Bureau of Explosives as to the least amount of sulphuric acid that must be added in order to protect the tank cars. This had not been a practical question theretofore, for the reason that, as just stated, the movement of nitric acid without the addition of sulphuric acid had not been so large but that glass carboys in sufficient quantity were to be had and shipments of nitric acid and sulphuric acid in tank cars had never contained less than 45 per cent of sulphuric acid, which mixture every one knew was safe to put in steel containers, there being no commercial use for a mixture containing less than 45 per cent of sulphuric acid. During 1918 the bureau was conducting experiments in order to ascertain the lowest percentage of sulphuric acid that must be added in order to make it possible to transport nitric acid safely in tank cars, but these experiments had not been completed. But it was the general consensus of opinion that it was necessary to add about 25 per cent of sulphuric acid by weight in order to protect the iron or steel con-

tainer and, in the opinion of Dr. Beistle, 20 per cent, the amount added by the importer in the case at bar, was as small a percentage as could have been added with safety to the cars and was even under the limit of safety.

The testimony fairly tends to show that as a commercial proposition there is only one practical means of transporting strong nitric acid such as that involved in the present importation in quantities sufficient to meet the current demand, and that is to mix it with a sufficient amount of sulphuric acid and ship it in tank cars or drums.

The testimony further shows that it would have been impossible even as a commercial proposition to procure, during the time that this shipping was going on, a sufficient number of glass carboys to cut even a considerable figure in the importations which were essential to the conduct of the importer's business.

Further, it appears from the testimony that the importer employed in this importation only sufficient sulphuric acid to render the shipment of the nitric acid in tank cars safe, namely, about 20 per cent, and that after being imported the mixture was not of proportions making it suitable for use in the importer's business or, so far as appears, for any use as an acid mixture. And the question presented in this case is whether this importation which might technically be called a mixture, was such a mixture as is contemplated by the statute.

It will be noted that the word "mixtures" is used in connection with compounds and preparations. Under the rule of ejusdem generis it would seem that the "mixtures" as here employed must be of the same kind or character of articles as are mentioned in the preceding portion of the paragraph. Of course all chemical and medicinal compounds and all alkalies and alkaloids have a distinct use. The word "preparations" implies of course that they are something prepared and adapted to particular uses or services. It is no stretch to say that the word "mixtures" as here employed was used in a similar sense to import mixtures susceptible of commercial use as they exist, or are at least such as are purposely started on their way toward adaptation to such use. While not resting this case solely upon this view, it certainly would appeal with great force were it the only consideration involved.

But over and beyond this, the question arises as to whether this mixture which in a sense was involuntary, it being a compliance with the regulation which made it possible to import the article into this country, was an act of preparation or an act of admixture with a purpose of producing a new article. Obviously it was not such. It was made necessary by the character of the article to be imported, and by the very appropriate and proper rules and regulations of the Interstate Commerce Commission controlling this shipment. This was

not in any true sense an importation of a mixed acid at all. It is evident that the importer sought to introduce nitric acid and had no desire to import sulphuric acid, or nitric and sulphuric acid as a usable mixture. This small percentage of sulphuric acid which was relatively insignificant in its money value was employed solely for the purpose of making it possible to ship the nitric acid into this country in usable quantities. The result was not a mixture merchantable as such for use in the United States. The article imported had to be subjected to one of two processes: It had either to have the sulphuric acid removed or it had to have an additional amount of sulphuric acid added before it could be usable. But as introduced it had no use until subjected to one or the other of these treatments.

Recognizing fully the rule which usually obtains that the condition of an article when imported determines its dutiable status, we think this rule is not infringed by holding this merchandise free goods. The merchandise had not reached the state of a commercial mixture contemplated by the statute. It was susceptible of no use other than as nitric acid, which must before use be again treated. The mixing of this minimum amount of sulphuric acid should be treated as a means of and part of the shipment, and as an act as essential in the importation of nitric acid as would have been the proper packing of glassware or other goods de-

signed for shipment by rail. It was an act analogous to the packing of goods for shipment. Indeed, in one sense it was the packing of goods for shipment, for the testimony shows that the operation of the sulphuric acid was to absorb the water in the nitric acid, leaving it less liable to corrode the tank than it would if left without this addition. It separated the true nitric acid from the water that it contained, and for which the sulphuric acid had a greater affinity, thus making the shipment in safety possible.

We are therefore of the opinion that the introduction of this minimum but essential quantity of sulphuric acid for the purpose indicated is more analogous to the act of packing for shipment than an attempt to prepare a mixture designed for use.

The board has dealt with this question on two separate occasions. The first case is that of T. D. 36000, G. A. 7828. In that case the evidence showed that a small quantity (3 per cent in value) of sulphuric acid was used for the purpose of protecting the tank car from the effect of nitric acid, as was done in this case, and the evidence also showed that the proportion of sulphuric acid in the mixture had no relation to any particular use; that is, that it would require the addition of much more sulphuric acid to make the mixture usable for trade purposes. The evidence in that case corresponded to that in this. It was said:

> We do not believe that in any proper sense this importation can be called a chemical mixture within the purpose and intent of Congress in enacting these provisions. It is without the spirit of the term "chemical mixture" as used in paragraph 5, and for all practical purposes remains nitric acid.

It was further said:

> It is worth noting that sulphuric acid is also free under paragraph 387, and it is unnecessary to decide in this case whether or not sulphuric acid and nitric acid, mixed in substantial proportions for some chemical or trade purpose other than mere protection in transportation, would be free.

In the present case, the majority of the board say of the Benzol Products case:

> We did say that nitric acid containing about 3 per cent in value of sulphuric acid, added solely for the purpose of safe transportation, was not within the terms "chemical mixture," as used in paragraph 5. If that decision is to be taken as a precedent to warrant holding that where 20 per cent of sulphuric acid by weight is added to the nitric acid for the purpose of safe transportation the mixture is free, then it was wrong and should be overruled.

Clearly that case was authority for the doctrine and could rest upon no other that a sufficient quan-

tity of sulphuric acid to comply with the regulations of the Interstate Commerce Commission and essential to the safe transportation of the nitric acid did not result in a chemical mixture such as was contemplated by paragraph 5. So that in effect the decision was overruled by the majority of the board in this case.

In other cases the board has laid down a rule that a mixture of nitric acid and sulphuric acid substantially half and half (47 per cent of sulphuric acid and 48 per cent of nitric acid) was dutiable. (T. D. 37285, G. A. 8082.) That case distinguished the Benzol Products case by pointing out that the mixture under consideration in the latter case was a mixture of substantial proportions and because of the further fact "that it is used in the form of a mixture and in the proportions as imported for manufacturing purposes, which was not true in the Benzol Products case."

So that it will be seen that the board, prior to the decision of this case, had drawn the line between mixtures made solely for the purpose of importation and mixtures which were usable in quantities in which they appeared.

Our attention has been called to the decision in United States v. Stone & Downer Co. (175 Fed., 33). The facts in that case were that 15 kilograms of alcohol, valued at 37.50 marks, were placed in kegs containing certain belladonna leaves and stalks cut up and 12 kilograms of alcohol valued at 30 marks were placed in kegs containing aconite

leaves and stalks cut up. The merchandise consisted of green belladonna or aconite leaves imported for the purpose of maceration in alcohol and for the purpose of making tinctures and extracts. The alcohol in which the leaves were immersed was continued in use in the maceration in this country, while incidentally it served as a preservation in the importation of said leaves by which the amount of alcohol so used lessened the quantity of alcohol required for complete maceration.

It appeared that the use of this alcohol in this form resulted in poisoning it and prevented any profitable attempt to extract the poison from it or to reduce it to its normal condition. The circuit judge was of the opinion that notwithstanding this fact the alcohol constituted a mere vehicle for the importation of the belladonna and aconite, of no more importance than the cask in which it was packed. The Court of Appeals held otherwise, and in the course of its opinion said, after describing the process:

> All this constitutes a process of either a chemical union or an atomic association, continuing from the beginning at the place of exportation until the tincture is complete, ready for the market.

Its final summing up was:

> Independently of the infusion into the alcohol of the virtues of the belladonna and the aconite partly accomplished on arrival at the

port of importation, even without which the commingling of the two elements might well be called a "union or mixture" according to lexicographers, yet in every sense the result of the *infusion* constitutes clearly a compound in, as we have explained from the lexicographers, the broad definition of the word. Therefore we have the following decisive elements: First, the broad definition of the word "compound," which, as applied here, is not limited by any trade usage or technical adaptation; second, we have in the mere commingling of two elements of the spirits on the one hand and the leaves and stalks of belladonna and aconite finely cut on the other hand, independently of infusion, a "compound" if it were necessary to leave the case there; third, we have an infusion which is of such a character that it does not result in a chemical change, and leaves the alcohol still alcohol, *although in a deteriorated condition;* (italics ours; it should be noted that there was no claim that this importation was dutiable under the provision for spirits); fourth, whatever may be said about the mere assembling of the different elements, this infusion, under the circumstances established, marks the existence of a compound; *and, fifth, as this infusion commences to be operative from the time the elements are assembled in the country of exportation, and this continues during the voyage, with assistance after arrival of further added alcohol, until, for at least certain purposes, a "tincture," in the strict sense of the word results, it seems to*

us clear that we have an importation of a compound of such a character and such a continuous history that it relates back to its beginnings at the time of shipment. (Italics ours.)

In order that we may not be misunderstood, we will state again that we comprehend thoroughly the facts that the whole product is not completed in the form of a tincture, and that the first use of the alcohol is mainly for the purpose of holding in a sound condition the leaves and stalks of the belladonna and aconite. Nevertheless, we can not perceive anything in the statute which justifies us in holding here that the primary purpose of using the alcohol as a mere preservative determines the classification, *although in some cases it would.* On the other hand, the fact is that the importation is an infusion to a greater or less degree, and therefore it is covered by the peremptory terms of paragraph 2, *although under some other paragraphs the purpose of the importation, and not the mere fact of the nature of the article imported, might more or less determine the classification.* (Italics ours.)

It is difficult to conceive any case in which the purpose of the importation and not the mere fact of the nature of the article imported could be more properly invoked for the purpose of determining the classification than in the present case. We could readily assent to the conclusion reached by the Court of Appeals in the Stone & Downer case, for there the commingling of the articles started

in force a process by which—dutiable goods being employed—their character had been changed so that on importation they could not well have been rated as distilled spirits and brought under the provision of the statute imposing a duty thereon, but had been committed to a continuing process which dated back to the first commingling of the alcohol with the belladonna and aconite.

In the present case we are convinced that there was neither an advantage to the importer in adding the requisite amount of sulphuric acid to admit of safe shipment of the nitric acid nor was there any possible loss of revenue to the Government. The sole purpose for which this addition was made was to admit of shipment. It would be sticking in the bark to say that this was such a mixture as the statute in question contemplates. It is not yet prepared. It has not been advanced as a preparation for actual use except to the extent that a small portion of the requisite amount of sulphuric acid which when added in the proper quantity would result in making a mixture which was usable, is found in this tank instead of some other. The quantity is relatively insignificant.

A chemical mixture can hardly be held to cover a material compound of a chemical substance with which there has been commingled by accident, and with no intent or purpose of forming a compound for use, a quantity of other material which may in itself constitute a chemical. This might con-

stitute a mixture in the literal sense, as in this case two chemical substances are mixed, but it seems clear that such a mixture is not what is referred to in the statute. What was meant was, as we think, a mixture which is adapted to use as such. True, this mixture is referred to in the record as mixed acid. Any degree of mixtures would justify this nomenclature, but it is nevertheless neither a usable mixture nor one which the importer purposely, as a process of manufacture, started to make such. It is simply the result of an effort to introduce into this country a quantity of nitric acid. In order to do this the importer was required to add this small quantity of sulphuric acid. The substance of the transaction was the shipment of nitric acid. In adding this, or by the process of commingling the two, no revenue was lost to the Government, for both were free. It is hardly to be conceived that the Government intended to exclude the introduction of nitric acid in quantities adequate to meet any requirements which the business of the country might require. If not, then it must have been contemplated that the necessary precautions in shipping this nitric acid across the border would be resorted to, and it is hardly conceivable that it was the intention to impose a tax on goods otherwise free which are chemically mixed only for the purpose of observing the requirements of the Government as to shipment.

We think that the true rule is that the introduction of a quantity of sulphuric acid solely for the

purpose of rendering the transportation of nitric acid safe, and which does not result in a usable mixture, is more in the nature of an act of shipment than an admixture and does not produce a substance which is dutiable under paragraph 5.

The fact that this is called in a sense an acid mixture as would be any acid, no matter what the extent of the substance introduced might be, is not controlling. The only safe line to be drawn is that indicated above.

This is a clear case for the application of the rule that a thing may be within the letter of a statute and yet not within the statute because not within its spirit nor within the intention of its makers. See Church of Holy Trinity *v.* United States (143 U. S. 457, 459); Heide *v.* United States (2 Ct. Cust. Appls. 399, 403; T. D. 32166).

The fact that this may work some possible inconvenience is not a serious one, for in every case regulations of the Interstate Commerce Commission, it may be assumed, are within the knowledge of the revenue officers, and the proper tests may be made to ascertain the character and nature of the importation as in all cases.

It may be said that the case is not wholly free from doubt. It is well settled that in such case the construction of the statute most favorable to the importer is to be adopted. See Wright & Graham cases (6 Ct. Cust. Appls. 528; T. D. 36147) and cases cited.

The decision of the board is *reversed*.

Judgment.

UNITED STATES COURT OF CUSTOMS APPEALS.

Tuesday, December 30, 1919.

At a session of said court continued and held at the City of Washington, pursuant to adjournment, on this 30th day of December, A. D. 1919.

* * * * * * *

AETNA EXPLOSIVES COMPANY, Appellant, v. THE UNITED STATES, Appellee.	No. 1974.

Said appeal having heretofore been brought on to be heard before the court and due consideration thereon having been had, it is

ORDERED that the decision of the Board of United States General Appraisers be, and the same is hereby, reversed, and the merchandise covered by said appeal is held to be free of duty under paragraph 387 of the tariff act of 1913; and said appeal is remanded to said Board for proper action in the premises.

* * * * * * *

(Signed) ROBERT M. MONTGOMERY,
Presiding Judge.

Certificate re Mandate of Court of Customs Appeals.

UNITED STATES COURT OF CUSTOMS APPEALS.

AETNA EXPLOSIVES COMPANY, Appellant, v. THE UNITED STATES, Appellee.	No. 1974.

The final mandate in the above entitled appeal, consisting of a certified copy of the order of the Court of the 30th day of December, 1919, was issued to the Board of United States General Appraisers on the 2nd day of February, 1920.

(Signed) ARTHUR B. SHELTON,
Clerk.

Clerk's Certificate.

UNITED STATES COURT OF CUSTOMS APPEALS.

AETNA EXPLOSIVES COMPANY, Appellant, v. THE UNITED STATES, Appellee.	No. 1974.

I, Arthur B. Shelton, Clerk of the United States Court of Customs Appeals, do hereby certify that the attached pages, numbered 1 to 222, inclusive, contain a true and complete transcript of the record and proceedings had in said court in the above entitled appeal, as the same remain of record and on file in this office.

Witness my hand and the seal of this court this 31st day of March, A. D. 1920.

(Signed) ARTHUR B. SHELTON,
Clerk.

(Seal)

Return to writ.

United States Court of Customs Appeals.

In obedience to the command of the within writ of certiorari and in pursuance of the stipulation of the parties which is hereto attached, I hereby certify that the transcript of record furnished with the application for the writ of certiorari in the case of Aetna Explosives Company *v.* The United States, No. 1974, is a full, true, and complete copy of the transcript of the record and proceedings in said appeal.

In testimony whereof, I hereunto subscribe my name and affix the seal of the United States Court of Customs Appeals this 11th day of May, A. D. 1920.

[SEAL.] ARTHUR B. SKELTON,
Clerk of the United States Court of Customs Appeals.

In the Supreme Court of the United States. October term, 1919.

UNITED STATES, petitioner,
v. No. 841.
AETNA EXPLOSIVES CO.

Stipulation as to return to writ of certiorari.

It is hereby stipulated by counsel for the parties to the above-entitled cause that the certified copy of the transcript of the record now on file in the Supreme Court of the United States shall constitute the return of the clerk of the United States Court of Customs Appeals to the writ of certiorari granted therein.

ALEX. C. KING,
Solicitor General.

ADDISON S. PRATT,
Counsel for Respondent.

UNITED STATES OF AMERICA, *ss:*

The President of the United States of America, to the honorable the judges of the United States Court of Customs Appeals, greeting:

Being informed that there is now pending before you a suit in which Aetna Explosives Company is appellant, and the United States is appellee, No. 1974, which suit was removed into the said Court of Customs Appeals by virtue of a petition for the review of the decision of the Board of United States General Appraisers, and we, being willing for certain reasons that the said cause and the record and proceedings therein should be certified by the said Court of Customs Appeals and removed into the Supreme Court of the United States, do hereby command you that you send without delay to the said Supreme Court, as aforesaid, the record and pro-

ceedings in said cause, so that the said Supreme Court may act thereon as of right and according to law ought to be done.

Witness the Honorable Edward D. White, Chief Justice of the United States, the sixth day of May, in the year of our Lord one thousand nine hundred and twenty.

JAMES D. MAHER,
Clerk of the Supreme Court of the United States.

File No. 27596. Supreme Court of the United States. No. 841, October term, 1919. The United States of America *vs.* Aetna Explosives Company. Writ of certiorari. Received May 12, 1920. Office of the clerk, Supreme Court, U. S.

File No. 27596. Supreme Court U. S. October Term, 1919. Term No. 841. The United States, Petitioner, *vs.* Aetna Explosives Co. Writ of certiorari and return. Filed May 12, 1920.

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In the Supreme Court of the United States.

OCTOBER TERM, 1919.

THE UNITED STATES, PETITIONER,
v.
AETNA EXPLOSIVES COMPANY. } No. ——.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CUSTOMS APPEALS, AND BRIEF IN SUPPORT THEREOF.

The United States prays for a writ of certiorari directed to the United States Court of Customs Appeals to bring before this court for review the decision and judgment rendered by the United States Court of Customs Appeals on the 30th day of December, 1919, in the case entitled *Aetna Explosives Company, appellant,* v. *The United States, appellee,* No. 1974.

This petition is filed pursuant to section 195 of the Judicial Code, as amended, which reads (38 Stat. 703):

> SEC. 195. That the Court of Customs Appeals established by this chapter shall exercise exclusive appellate jurisdiction to review by appeal, as herein provided, final decisions by a board of general appraisers in all cases as to the construction of the law and the facts

respecting the classification of merchandise and the rate of duty imposed thereon under such classifications, and the fees and charges connected therewith, and all appealable questions as to the jurisdiction of said board, and all appealable questions as to the laws and regulations governing the collection of the customs revenues; and the judgments and decrees of said Court of Customs Appeals shall be final in all such cases: *Provided, however,* That in any case in which the judgment or decree of the Court of Customs Appeals is made final by the provisions of this title, it shall be competent for the Supreme Court, upon the petition of either party, filed within sixty days next after the issue by the Court of Customs Appeals of its mandate upon decision, in any case in which there is drawn in question the construction of the Constitution of the United States, or any part thereof, or of any treaty made pursuant thereto, or in any other case when the Attorney General of the United States shall, before the decision of the Court of Customs Appeals is rendered, file with the court a certificate to the effect that the case is of such importance as to render expedient its review by the Supreme Court, to require, by certiorari or otherwise, such case to be certified to the Supreme Court for its review and determination, with the same power and authority in the case as if it had been carried by appeal or writ of error to the Supreme Court: *And provided further,* That this act shall not apply to any case involving only the construction of section one, or any

portion thereof, of an act entitled "An act to provide revenue, equalize duties, and encourage the industries of the United States, and for other purposes," approved August 5, 1909, nor to any case involving the construction of section two of an act entitled "An act to promote reciprocal trade relations with the Dominion of Canada, and for other purposes," approved July 26, 1911.

While this case was pending in the Court of Customs Appeals, the respondent (appellant below) requested the Attorney General to file a certificate of importance.

Thereafter, upon careful consideration of the record in the case and to the end that the question involved might be definitely settled, the Attorney General duly filed a certificate that in his opinion this case "is of such importance as to render expedient its review by the Supreme Court of the United States."

The Court of Customs Appeals issued its mandate upon decision February 2, 1920.

THE FACTS OF THE CASE.

In the winter 1917–18, respondent needed large quantities of nitric acid in order to perform a contract for the manufacture of explosives. Respondent had in this country a large plant where it could manufacture the explosives; but at that plant it could not produce enough nitric acid to meet immediate requirements. Respondent had in Canada an idle plant where it could produce the requisite nitric acid.

The only practicable method of transporting such large quantities of nitric acid was in tank cars; but in both Canada and the United States the transportation of nitric acid in tank cars is forbidden by regulations governing the transportation of dangerous articles. Nitric acid corrodes the tanks and the escaping acid may cause fires. However, the transportation of mixed nitric and sulphuric acids is permitted, although there are no specifications as to the proportions in which they shall be mixed. It is the consensus of opinion that for safety there should be at least 25 per cent by weight of sulphuric acid in such mixtures.

Both (*a*) sulphuric acid and (*b*) mixtures of nitric and sulphuric acids in certain proportions are employed in the manufacture of explosives. As sulphuric acid could be produced in the United States in sufficient quantity and as cheaply as in Canada, respondent did not desire to incur the cost of transporting sulphuric acid from Canada; but respondent was willing to pay the freight thereon if in conjunction therewith the output of its Canadian nitric-acid plant could be secured.

Despite the consensus of opinion as to what mixtures can be transported safely, respondent directed the making and importation of mixtures containing only about 20 per cent of sulphuric acid. Respondent's principal witness testified that he thought no owner of tank cars would knowingly lease his cars to be used for such a mixture; but as respondent was shipping in its own cars, it adopted that com-

position. In the instant importations the actual percentages of sulphuric acid varied from 17.01 to 22.65 per cent.

Though the opinion of the court below seems to assume that the imported mixtures were made in compliance with some regulation of the Interstate Commerce Commission, yet as to "mixed nitric and sulphuric acids" the record shows only regulations which prescribe the containers in which such mixtures may be shipped, and the methods of packing, labeling, etc. The record discloses no regulation prescribing the relative proportions of the ingredients in such mixtures.

By adding oleum (a concentrated form of sulphuric acid) to nitric acid, respondent produced mixtures of nitric acid, sulphuric acid, and water. In their condition as imported the mixtures could not be put to the uses of either straight sulphuric acid or straight nitric acid. The only commercial use for the mixtures was in the production of (a) fortifying acids (which contain from 45 per cent to 50 per cent of sulphuric acid) and of (b) nitrating acids (which contain from 60 per cent to 75 per cent of sulphuric acid). The imported mixtures were converted into fortifying and nitrating acids simply by the addition of more sulphuric acid. When the mixtures were made, the constituent elements thereof became so combined that there came into being a new commodity which was far advanced in the process of producing fortifying or nitrating acids.

The separation of the mixtures into their constituent parts was commercially impracticable because of the prohibitive cost.

At the time of importation the merchandise was neither nitric acid in fact, nor commercially known as nitric acid. Under the regulations of the Interstate Commerce Commission the merchandise could not be labeled as nitric acid. It could be put to no use to which nitric acid is put except in the production of fortifying or nitrating acids. Respondent invoiced it as "mixed acid," and entered it at the customhouse as "mixed acid." The protests now in litigation called it "mixed acid."

The record shows that mixtures like those imported are bought and sold in the commerce of the United States under the name "mixed acid;" that respondent itself has purchased such mixtures; that respondent had manufactured and sold them; and that others had bought and used them. In short, the mixing of the acids produced a new commercial commodity.

Respondent's brief before the Court of Customs Appeals put considerable emphasis upon the testimony of its general manager (R. 58) that—

> the real essential situation was that the United States Navy wanted some trinitrotuluol in a hurry, and they combed this country to find the nitrating capacity for producing it, and we had the capacity for producing it but we didn't have any nitric acid, and we said we have a nitric-acid plant in Canada and we will make it and give you this trinitrotuluol, and the

> Government accepted it on those terms, and when the question of duties came up we knew that nitric acid and sulphuric acid were free, and we thought this, that a minimum amount of sulphuric added to the nitric to make it possible to ship would be construed as not coming under the dutiable clause. There was a little bit of theory about that and we had recourse to these decisions, and we became more and more satisfied we were correct on it because it seemed that the original tariff act mentioned a mixed chemical or a chemical mixture and—(Here the witness was interrupted).

From that testimony it will be noted that the question of duties was not considered by the United States Navy. Instead, it was considered by the respondent. The Secretary of the Navy did not procure free entry for the mixed nitric and sulphuric acids under the Act of 1914 (ch. 130, 38 Stat. 399), which provides as follows:

> That hereafter the Secretary of the Navy is hereby authorized to make emergency purchases of war material abroad: *And provided further*, That when such purchases are made abroad, this material shall be admitted free of duty.

The fact that respondent was to manufacture explosives for the Navy has no bearing on the issue of law.

THE ISSUE OF LAW.

The several importations, like many similar importations, were assessed with duties by the collector of customs at the port of Ogdensburg, N. Y., under the provision in paragraph 5, tariff act of 1913, reading

"chemical * * * compounds, preparations, mixtures and salts, * * * not specially provided for in this section" (38 Stat. 114).

Respondent filed statutory protests against the collector's assessments of duties, claiming that the importations were entitled to free entry under paragraph 387 of the tariff act of 1913 (38 Stat. 152), which reads:

> 387. Acids: Acetic, or pyroligneous, arsenic or arsenious, carbolic, chromic, fluoric, hydrofluoric, hydrochloric or muriatic, *nitric*, phosphoric, phthalic, prussic, silicic, *sulphuric*, or oil of vitriol, and valerianic. [Italics ours.]

After a trial before the Board of General Appraisers the protests were overruled, one general appraiser dissenting (T. D. 37927). On appeal, the Court of Customs Appeals reversed the decision of the board (9 Ct. Cust. Appls. ——, T. D. 38238) and held that the merchandise was free of duty.

Respondent's protests referred to the merchandise as "mixed acid," and claimed that it was free as "sulphuric acid or nitric acid." Respondent's petition to the Court of Customs Appeals seemed not to reassert the sulphuric-acid claim, but to be confined to the claim that the merchandise was free of duty "as nitric acid." Seemingly that is the claim which the court sustained.

It is respectfully submitted that a writ of certiorari should issue.

ALEX. C. KING,
Solicitor General.
BERT HANSON,
Assistant Attorney General.

BRIEF IN SUPPORT OF PETITION.

ARGUMENT.

I.

In principle the decision of the Court of Customs Appeals is in conflict with a decision by the Circuit Court of Appeals which had long been accepted as a guide to administrative practice.

As the collector's exactions of duties were thought to be in harmony with the principle of *United States* v. *Stone & Downer* (175 Fed. 33), it is well to trace the development of that case.

Before that case arose, the Board of General Appraisers considered the proper classification of crushed or ground medicinal leaves saturated or barely covered with alcohol. That was in 1899. Though the issue was not directly involved, yet there was discussion as to whether the merchandise constituted an "alcoholic compound." (*Otis Clapp & Son's* case, T. D. 20516.) The Treasury Department concurred in the dissenting general appraiser's view that there was a "compound," and directed a collector of customs to conform his "practice thereto and classify like commodities as alcoholic compounds" (T. D. 20711). As a consequence there arose *Boericke & Runyon Company's* case, involving certain leaves and roots in alcohol which had been assessed with duties under a provision for "alcoholic compounds." In 1901 the Board of General Appraisers overruled the

protest against that assessment (T. D. 23354). In 1903 that decision was reversed by the Circuit Court for the Southern District of New York, the court saying (*Boericke & Runyon Company* v. *United States*, 126 Fed. 1018, 1019):

> As imported, the merchandise either consists of natural fresh leaves and roots, kept in that condition for transportation and subsequent use as such, the leaves and roots being substantially the thing imported, and the alcohol a mere vehicle, of no more importance than the cask in which they are packed; or else it consists of the leaves and roots and the alcohol as the factors in a loose and temporary association for the purpose, as aforesaid, of maintaining the roots and leaves in their natural condition and fit to subserve their intended use. On either analysis, it is manifest that there is here no combination, no new whole, no compound body, no union, and no elements, ingredients, or parts so put together as to produce, by combination or otherwise, anything.

Such was the legal situation when there was presented a similar issue in *Stone & Downer's* case. "Desiring to conform to" the *Boericke & Runyon* decision, the Board of General Appraisers in 1906 sustained importer's protest (Abstract 11235, T. D. 27348). In May, 1909, the Circuit Court for the District of Massachusetts affirmed the board's decision on the authority of the *Boericke & Runyon* case (*United States* v. *Stone & Downer*, 171 Fed. 293).

It was soon made evident that this judicial limitation of the expression "alcoholic compounds" was not acceptable to the Congress. In Notes on Tariff Revision, prepared for the use of the Committee on Ways and Means, House of Representatives, 1908, attention was directed (at pp. 13–14) to the *Boericke & Runyon* case and the then pending *Stone & Downer* case; and the comment was made that the classification directed therein was "at variance with the manifest intention of Congress." In accord with a suggestion in Notes on Tariff Revision, Congress overcame the effect of the above-cited judicial decisions by adding to the words "alcoholic compounds" the words "including all articles consisting of vegetable, animal, or mineral objects immersed or placed in, or saturated with, alcohol." (Par. 2, tariff act of Aug. 5, 1909, 36 Stat. 12.)

That the limitations placed by the Circuit Courts upon the expression "alcoholic compounds," when standing alone, did not accord with the congressional intent, was subsequently established in the *Stone & Downer* case. In December, 1909, the Circuit Court of Appeals for the First Circuit reversed the Circuit Court and held that the imported merchandise was dutiable under the provision for "alcoholic compounds," (*United States* v. *Stone & Downer*, 175 Fed. 33.)

In the instant case respondent's principal argument was parallel to the argument of the importers in the *Boericke & Runyon* and *Stone & Downer* cases.

Though there had been congressional disapproval of the *Boericke & Runyon* decision and the first *Stone & Downer* decision, and though finally in the *Stone & Downer* case the Circuit Court of Appeals had overruled the importer's contention, yet in the instant case the Court of Customs Appeals sustained the parallel argument. In the *Stone & Downer* opinion the Circuit Court of Appeals specifically disapproved the contention that the alcohol was "a mere vehicle" for the vegetable matter immersed therein. In the instant case the court said that the mixing of the sulphuric acid with the nitric acid "should be treated * * * as an act as essential in the importation of nitric acid as would have been the proper packing of glassware or other goods designed for shipment by rail."

It is pertinent to note that ordinarily "packing for glassware or other goods" is discarded when the merchandise is used. But in the instant case the imported mixture was used as imported, more sulphuric acid being added to it.

Though the court's opinion in the instant case attempts to distinguish the *Stone and Downer* case, yet it is extremely doubtful whether any sound distinction has been drawn.

In the instant case the court said that the imported merchandise is "not a mixture merchantable as such for use in the United States"; and that what the statute "meant was, as we think, a mixture which is adapted to use as such." The court's decision was

largely influenced by the fact that for commercial purposes more sulphuric acid had to be added to the imported merchandise.

In the *Stone and Downer* case not only was it commercially impracticable to segregate the leaves and the alcohol, but also before being put to their ultimate use the leaves had to be further macerated and more alcohol had to be added. In that case it might equally well have been said that at the time of importation the alcoholic compound was not "merchantable as such for use in the United States," and was not "adapted to use as such." In neither case at the time of importation was the merchandise ready for its ultimate use. In principle the two decisions seem to be in irreconcilable conflict.

II.

In classifying the merchandise the Court of Customs Appeals adopted as its tests factors which have not heretofore met with judicial approval in cases of this character.

The court made "the *purpose* of the importation" rather than "the *nature* of the article imported" the test for classification. While certain paragraphs of the tariff act specifically make the intended *use* of an imported article the determinative factor in its classification, yet paragraph 5 is not one of them.

It is submitted that the court should not have considered "the purpose of the importation." It is well settled that the *intent* of the manufacturer in produc-

ing an article is not an element in determining its dutiable classification upon importation.

Seeberger v. *Farwell*, 139 U. S. 608, affirming.

Farwell v. *Seeberger*, 40 Fed. 529.

Magone v. *Luckemeyer*, 139 U. S. 612, affirming.

Luckemeyer v. *Magone*, 38 Fed. 30.

United States v. *Irwin*, 78 Fed. 799, 801.

Johnson v. *United States*, 123 Fed. 997.

United States v. *Levitt*, 26 Fed. Cas. 919, No. 15594.

It appeared in *Magone* v. *Luckemeyer*, *supra*, that for the purpose of securing a lower classification, less than 2 per cent of cotton fibers were introduced into the wool fibers of a fabric prior to the spinning process. In appearance, texture, quality, and use the woven goods were indistinguishable from goods composed wholly of wool. The cotton in them could be discovered only by chemical analysis. Yet the cotton fibers changed the classification of the goods. The dutiable status of the merchandise was determined by the condition of the article when imported rather than by the intent of the importer or "the purpose of the importation."

Applying this principle to the case at bar it would seem to follow that by the addition of sulphuric acid in substantial amount to nitric acid there was created a new entity having a different classification than the constituent parts which entered into its composition.

In its brief before the Court of Customs Appeals, respondent admitted that the merchandise "is a

chemical mixture within the literal meaning of paragraph 5;" but it contended that "to interpret the paragraph literally in every case will sometimes, as in the case at bar, * * * produce absurd results, results which were clearly not within the intention of Congress." The court's opinion seems to approve that contention.

Though the record shows that the imported merchandise is merchantable and is used in this country, yet the court said that that merchandise is "not a mixture merchantable as such for use in the United States," and that the merchandise "had not reached the state of a commercial mixture contemplated by the statute." Though recognizing that the merchandise "might technically be called a mixture" and was "a mixture in a literal sense," yet the court held that it was not "such a mixture" as is "referred to in the statute," because what the statute "meant was, as we think, a mixture which is adapted to use as such." As more sulphuric acid had to be added to make the imported mixtures into fortifying acids or into nitrating acids, the court held that the merchandise did not fall within the paragraph under which it was assessed.

Though the language of paragraph 5 is broad enough to cover all chemical mixtures, not otherwise specially provided for, yet the court held that such merchantable chemical mixtures as are involved in the case at bar, are not embraced by that paragraph.

It is fundamental that when a statute is unambiguous, courts should look to the statute itself for

the intent of Congress. It is not open to construction.

Caminetti v. *United States*, 242 U. S. 470,485.
Five Per Cent Discount Cases, 243 U. S. 97.

In customs cases this court has adhered to a rather literal interpretation of the statutes:

Merritt v. *Welsh*, 104 U. S. 694.
Seeberger v. *Farwell*, 139 U. S. 608.
Magone v. *Luckemeyer*, 139 U. S. 612.
United States v. *Citroen*, 223 U. S. 407.

Merritt v. *Welsh*, *supra*, involved the question whether the dutiable quality of sugar was to be decided by its actual color graded by the Dutch standard or by its saccharin strength, as ascertained by chemical tests. The court held that the former method was the proper one. At page 702 the court said:

> Uncertainty and ambiguity are the bane of commerce. Discretion in the customhouse officer should be limited as strictly as possible. It has been said with much truth, "Where law ends, tyranny begins."

On the same page the court said:

> Whatever may have been in the minds of individual Members of Congress, the legislative intent is to be sought, first, from the words they have used. If these are clear, we need go no further; if they are obscure or ambiguous, then the intent may have to be sought out by reference to the context, to previous or concurrent enactments, to the history of the art or trade, to general history, to anything that will

> throw light on the meaning of the obscure or ambiguous terms used. But there is no obscurity or ambiguity here. Two tests for fixing the dutiable grade of sugars were open to the legislative choice—that of color and that of constitution or chemical quality. Congress chose the former. * * *
>
> But in making its election Congress did not leave any room for doubt as to its meaning. It used apt terms to express it; terms free from all ambiguity and obscurity. If the test adopted fails to effect the desired object, the inconvenience, or loss to the Treasury, need only be temporary; it can be changed at any moment. And it is better to submit to a temporary inconvenience than to set the laws all afloat by laying down a canon of construction which leaves plain words, and seeks to spell out, or guess at, the supposed intent of the legislature, contrary or supplementary to that which is clearly embodied in the words it has used.

The court said at page 705:

> A better remedy than that of making a forced construction of the law is in the power of Congress. All that has to be done is to change the law so as to reach the goods in their new form, if it is thought desirable to do so. If the law is found defective, let it be altered so as to attain the result desired.

In *United States* v. *Citroen*, *supra*, the court said (p. 415):

> In the paragraph as to jewelry (434) Congress expressly defined what pearls were to be

> included. The paragraph reads, "including * * * pearls set or strung." It does not say pearls that can be strung, or that are assorted or matched so as to be suitable for a necklace, but pearls "set or strung." We are not concerned with the reason for the distinction; it is enough that Congress made it.

And at page 416 the court said:

> The statute has furnished the test and we are not at liberty to make another.

In *United States* v. *Shing*, 173 Fed. 844, the Circuit Court for the Northern District of California, in passing upon the provision in paragraph 264 of the tariff act of 1897 for olives "in bottles, jars or similar packages," and "in casks or otherwise than in jars, bottles or similar packages," said at page 846:

> It will be seen that the board, in the case last quoted from, has ignored the plain terms of the act and adopted a construction based upon an assumption of what Congress "had in mind." If there were anything equivocal or uncertain in the terms of the statute, there might be room for some such construction; but there is not.
>
> * * * * *
>
> It must be presumed that in using those terms Congress did so with full knowledge of the customs and usages of the trade, and the popular and common understanding as to their signification.
>
> * * * * *
>
> It is apparent, I think, that no such exception or qualification as that sought to be

interpolated into the act is to be gathered from its language, although it would have been a very simple thing for Congress to have expressed, if such was its purpose; but this it has not done, and, when no exception or qualification is found in the act itself, the courts are not at liberty to create one. By its terms the rate of duty is made to depend upon whether the article is imported in a certain designated character or receptacle, without regard to its capacity; and this requirement the customs authorities and the courts are alike bound to observe. Where the language employed in an act is clear and certain, they have nothing to do with the reasonableness or justice of the results flowing from according it its natural, usual, and obvious meaning, nor with any supposed policy actuating its framers. *Bate Refrigerating Co.* v. *Sulzberger*, 157 U. S. 1; 15 Sup. Ct. 508; 39 L. Ed. 601.

* * * * *

And again, in *Hadden* v. *Collector*, 5 Wall. 107, 111; 18 L. Ed. 518:

> What is termed the policy of the Government with reference to any particular legislation is generally a very uncertain thing, upon which all sorts of opinions, each variant from the other, may be formed by different persons. It is a ground much too unstable upon which to rest the judgment of the court in the interpretation of statutes.

In order to produce uniformity in the imposition of duties, the dutiable classification of articles imported must be ascertained by an examination of

the imported article itself, in the condition in which it is imported.

> *United States* v. *Schoverling*, 146 U. S. 76.
> *Worthington* v. *Robbins*, 139 U. S. 337.

In *Dwight* v. *Merritt*, 140 U. S. 213, 219, the court said:

> All the various questions of utility and adaptation of the merchandise imported are are not supposed to enter into the decision of the collector in determining its dutiable classification, under the rule in *Worthington* v. *Robbins*.

In *Frankenberg* v. *United States*, 206 U. S. 224, certain metal beads strung on cotton cords or strings, although only temporarily strung to facilitate transportation, were held dutiable as manufactures of metal under paragraph 193, tariff act of 1897, rather than as "beads of all kinds not threaded or strung" under paragraph 408 of said act. The court said at page 225:

> There is no dispute about the character of the articles. They are metal beads strung on cotton cords or strings. They can not, therefore, be said to be beads "not threaded or strung," which paragraph 408 makes dutiable at 35 per cent, if the words of that paragraph be taken literally. * * * It may be that the stringing of the beads has but a temporary purpose. We, however, are not at liberty to disregard the condition upon which the law makes the duty depend.

In the instant case, at the time of importation the merchandise was a chemical mixture.

This leads to another fundamental of tariff litigation. To succeed a protestant must establish both (1) that the collector's classification is wrong, and (2) that the classification claimed by protestant is right. Unless both be established, a protest must be overruled. Let us assume (for the argument) that the instant mixture had not been advanced to such a condition that it was within the meaning of paragraph 5. The establishment of that fact would have met respondent's first burden; but it would not have met respondent's burden of establishing that the merchandise was nothing more than nitric acid. If the merchandise was something more than nitric acid but yet not dutiable under paragraph 5, then perhaps it was dutiable as a partly manufactured nonenumerated article under paragraph 385 of the tariff act of 1913 at 15 per centum, the same rate at which it was assessed under paragraph 5. However, it is unnecessary to follow this line of thought further. All that is necessary to point out here is that if the merchandise was not entitled to free entry, then respondent failed to meet its second burden, and the protests should have been overruled.

The court's opinion adverted to the fact that both sulphuric acid and nitric acid are in the free list; but so far as it related to the questions of law under consideration that fact was inconsequential.

No question as to the segregation of mixed commodities for dutiable purposes is involved in this case. At no time did respondent assert such a claim. If it had, two complete answers would have been made, viz: (1) The mixing of the acids produced a new commercial commodity, to wit, "mixed acid." (2) The mixed-commodities principle could not possibly apply because commercially it was impracticable to separate the two acids. It is possible that the conclusiveness of these answers deterred respondent from asserting that claim.

III.

At the conclusion of its opinion the Court of Customs Appeals specifically said that "The case is not wholly free from doubt."

IV.

Confusion in the administration of the tariff laws can be avoided only by having this case reviewed in this court.

The conflict between (*a*) the instant decision and (*b*) the long accepted principle of *United States* v. *Stone & Downer, supra,* which certainly had congressional approval, will make the administration of the tariff laws difficult and uncertain.

The difficulty and uncertainty will be enhanced by those tests for determining the classification of imported merchandise which have been used in this case by the Court of Customs Appeals.

Some of the practical difficulties in the administration of the law which may flow from this decision

may be illustrated by a simple example. In a subsequent tariff act sulphuric acid may be placed in the dutiable list and nitric acid may remain in the free list, as was the case in the tariff act of 1909, 36 Stat. 11 (see pars. 1 and 482, respectively). If there should be imported a mixture such as that at bar, then a commodity containing at least one-fifth of a dutiable ingredient (i. e., sulphuric acid) would, pursuant to this decision, be entitled to free entry as *nitric acid*.

ALEX. C. KING,
Solicitor General.
BERT HANSON,
Assistant Attorney General.

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FILED
APR 30 1920
JAMES D. MAHER,
CLERK.

IN THE

Supreme Court of the United States

October Term—1919

No. [redacted]296

THE UNITED STATES OF AMERICA,
Petitioner,

against

AETNA EXPLOSIVES COMPANY,
Respondent.

BRIEF IN ANSWER TO PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CUSTOMS APPEALS.

ADDISON S. PRATT,
GEORGE ROBERTS,
Attorneys for Aetna Explosives Company.

Ingle, Inc., 185 William Street.

IN THE

Supreme Court of the United States

October Term—1919.

THE UNITED STATES OF AMERICA, *Petitioner,* *against* AETNA EXPLOSIVES COMPANY, *Respondent.*	No. 841.

BRIEF IN ANSWER TO PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CUSTOMS APPEALS.

By this petition the Government seeks to have reviewed the unanimous decision of the Court of Customs Appeals (T. D., 38238), holding the merchandise in question entitled to entry free of duty and reversing the Board of General Appraisers, one member dissenting (T. D., 37927).

Because of the peculiar and unusual requirements of Section 195 of the Judicial Code, as amended (38 Stat. L., 703), limiting the power of this Court to review the decisions of the Court of Customs Appeals to cases in which the construction of the Constitution or of a treaty is drawn in question, and in other cases only when the Attorney General has filed with the lower Court a certificate that the case is of such importance as to render its review by this Court expedient, the respondent (the importer) requested the Attorney General to examine the record herein and, if in his opinion the question in-

volved justified it, to file such a certificate, in order that, if the decision of the Court of Customs Appeals should be against it, it might have the right to petition this Court for a writ of certiorari, and such a certificate was filed.

The Question Involved is Solely One of Classification Under the Tariff Act.

The merchandise consisted of nitric acid shipped by rail in tank cars by the importer from its plant at Drummondville, Canada, to its plant at Emporium, Pa. *Solely in order to protect the iron tank cars from the corrosive and destructive effect of the nitric acid and in compliance with the Regulations of the Interstate Commerce Commission, which prohibit the transportation of nitric acid in tank cars otherwise, violation of the Regulations being made a criminal offense by Section 235 of the Penal Code of 1909, only enough sulphuric acid (in fact somewhat less, perhaps, than the minimum of safety) was added to the nitric acid in order to make it possible to transport the nitric acid in the tank cars safely.*

The only question involved in the case is whether, within the fair intendment of the Tariff Act of 1913, this imported merchandise was nitric acid, or nitric acid and sulphuric acid, both of which are *eo nomine* on the free list (Par. 387), or, because of such compulsory addition of sulphuric acid, became a chemical mixture and subject to a 15% duty under Par. 5.

Facts Not Referred to in Petition.

For some reason the statement of facts in the petition makes no reference to some of the most salient and important facts in the case. We will, therefore, set them down here.

1. The addition of sulphuric acid to nitric acid has the effect, for some unknown reason, of preventing the corrosive effect of nitric acid upon iron or steel.

2. The nitric acid manufactured in Canada and desired to be imported had a specific gravity of over 1.49.

3. Under the Regulations of the Interstate Commerce Commission nitric acid of a specific gravity exceeding 1.49 may be transported *only* in small glass bottles with ground glass stoppers of a capacity not exceeding seven pounds of acid, *i. e.*, five pint bottles, each bottle packed separately in a tightly closed metal container and well cushioned by material that will not be ignited by the acid. Such a method of transportation was manifestly both commercially and physically impossible where, as here, a large quantity was to be moved, *i. e.*, from 750 to 1,250 tons per month.

4. Even if the specific gravity of the nitric acid had been reduced by the addition of water to a point between 1.43 and 1.49, it could have been transported under these Regulations *only* in glass carboys well cushioned by incombustible packing material and packed in tight cyliadrical iron cases covering the bottom and sides and fitting tightly in outside wooden boxes—also impossible, both commercially and physically, as there are probably not over 100 such carboys in existence.

5. The Regulations permit the shipment of mixed nitric and sulphuric acids in tank cars, but the minimum quantity of sulphuric acid that must be added in order to make it possible to transport the nitric acid safely had not been determined in 1918. Although it was the general consensus of opinion that the addition of about 25% by weight is necessary, the importer here added only an average of about 20%, which was, perhaps, under the limit of safety.

6. Section 235 of the Penal Code of 1909 provides that any violation of these Regulations shall be punished by a fine of not more than $2,000, or by imprisonment for not more than eighteen months, or both.

7. The Regulations also provide that the shipper must describe the article on the shipping order and the bill of lading by the specific name provided for it in the carrier's classification and tariff, which is the reason why the merchandise was invoiced and entered as mixed acid.

8. While the term mixed acid was applied to the merchandise in question, that term has not now, and did not have prior to 1913, any definite commercial meaning, it being applied to any mixture of nitric and sulphuric acids, generally containing at least 45% of sulphuric acid.

9. There are only two mixtures of nitric and sulphuric acids which have any definite commercial use and which are bought and sold commercially (1) a mixture containing from 60% to 75% of sulphuric acid, also called nitrating acid, and (2) a mixture containing from 47% to 50% of sulphuric acid, also called fortifying acid.

10. The merchandise imported, containing about 20% of sulphuric acid, had no known commercial use, was not bought and sold commercially and could not be used without the addition of more sulphuric acid. Even the presence of the 20% was a disadvantage to the importer.

The Decision of the Court of Customs Appeals Was Correct.

Near the close of its opinion the Court of Customs Appeals said:

> "We think that the true rule is that the introduction of a quantity of sulphuric acid, solely for the purpose of rendering the transportation of nitric acid safe, and which does not result in a usable mixture, is more in the nature of an act of shipment than of admixture and does not produce a substance which is dutiable under Paragraph 5" (*i. e.*, does not produce a chemical mixture within the true tariff meaning of that term, although technically it might be so called).

This quotation contains the gist of the Court's opinion. It lays down the line to be drawn between chemical mixtures which are within the statute and chemical mixtures which, though literally and technically within the statute, are yet not within it because not within its spirit or the intention of its makers, placing mixtures of nitric and sulphuric acids in the proportions requisite to make a fortifying acid or a nitrating acid within the statute and, therefore, subject to duty, and leaving mixtures containing only enough sulphuric acid to make it possible to transport the nitric acid without violation of the law, without the statute and, therefore, free of duty.

Such a dividing line is both reasonable and easy of application, subjecting to duty mixtures made for a definite, commercial use and leaving free of duty mixtures made only because of the exigencies of transportation and having no commercial use.

Any Other Rule Would Produce Absurd and Unjust Results.

Although nitric acid is free of duty *eo nomine*, as it is forbidden by law to transport it in any form of container, other than glass, without the addition of sulphuric acid, which is also free of duty, the application of any other rule than the one laid down by the Court of Customs Appeals will produce this unjust and absurd result, viz., that the small importer of nitric acid, or the importer in small quantities, will be permitted to import his nitric acid free of duty, while the large importer, or the importer in large quantities, will be obliged to pay a duty of 15%. Such a result could never have been intended by Congress, nor will it be permitted by judicial construction.

As the Court of Customs Appeals said:

> *"It is hardly to be conceived that the government intended to exclude the introduction of nitric acid in quantities adequate to meet any requirements which the business of the country might require. If not, then it must have been contemplated that the necessary precautions in shipping this nitric acid across the border would be resorted to, and it is hardly conceivable that it was the intention to impose a tax on goods otherwise free which are chemically mixed only for the purpose of observing the requirements of the government as to shipment."*

The Stone & Downer Case Is Not in Conflict with the Decision of the Court of Customs Appeals Here.

Petitioner's principal argument is based upon the case of *U. S.* v. *Stone & Downer*, 175 Fed., 33. But, as the Court of Customs Appeals pointed out, that case is readily distinguishable from the case at bar, "for there the commingling of the articles started in force a process by which—dutiable goods being employed—their character had been changed so that on importation they could not well have been rated as distilled spirits and brought under the provision of the statute imposing a duty thereon, but had been committed to a *continuing process* which dated back to the first commingling of the alcohol with the belladonna and aconite" (italics ours).

In the case at bar, both nitric acid and sulphuric acid are free of duty, so that there has been no loss of revenue, and no process of change continuing throughout the journey was begun by the addition of the sulphuric acid. When the alcohol was added to the belladonna and aconite leaves a process of infusion, forming a tincture, was begun, which continued throughout the journey and was completed by further infusion after arrival in the United States.

In the *Stone & Downer* case the articles imported were the ingredients of a completed article, already commingled and in the process of manufacture; in the case at bar, the articles imported were only two of the raw materials from which the completed article, trinitrotoluol, was manufactured and, although commingled, were not in any sense in the process of manufacture.

In the *Stone & Downer* case the importer evidently desired to import both the leaves and stalks and the alcohol; in the case at bar the importer desired to import only the nitric acid, but was compelled to add the sulphuric acid as a sort of container for the nitric acid.

As the decision of the Court of Customs Appeals was correct and there is no real conflict with any other decision, there is no occasion for granting a writ of certiorari and the petition should be denied.

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